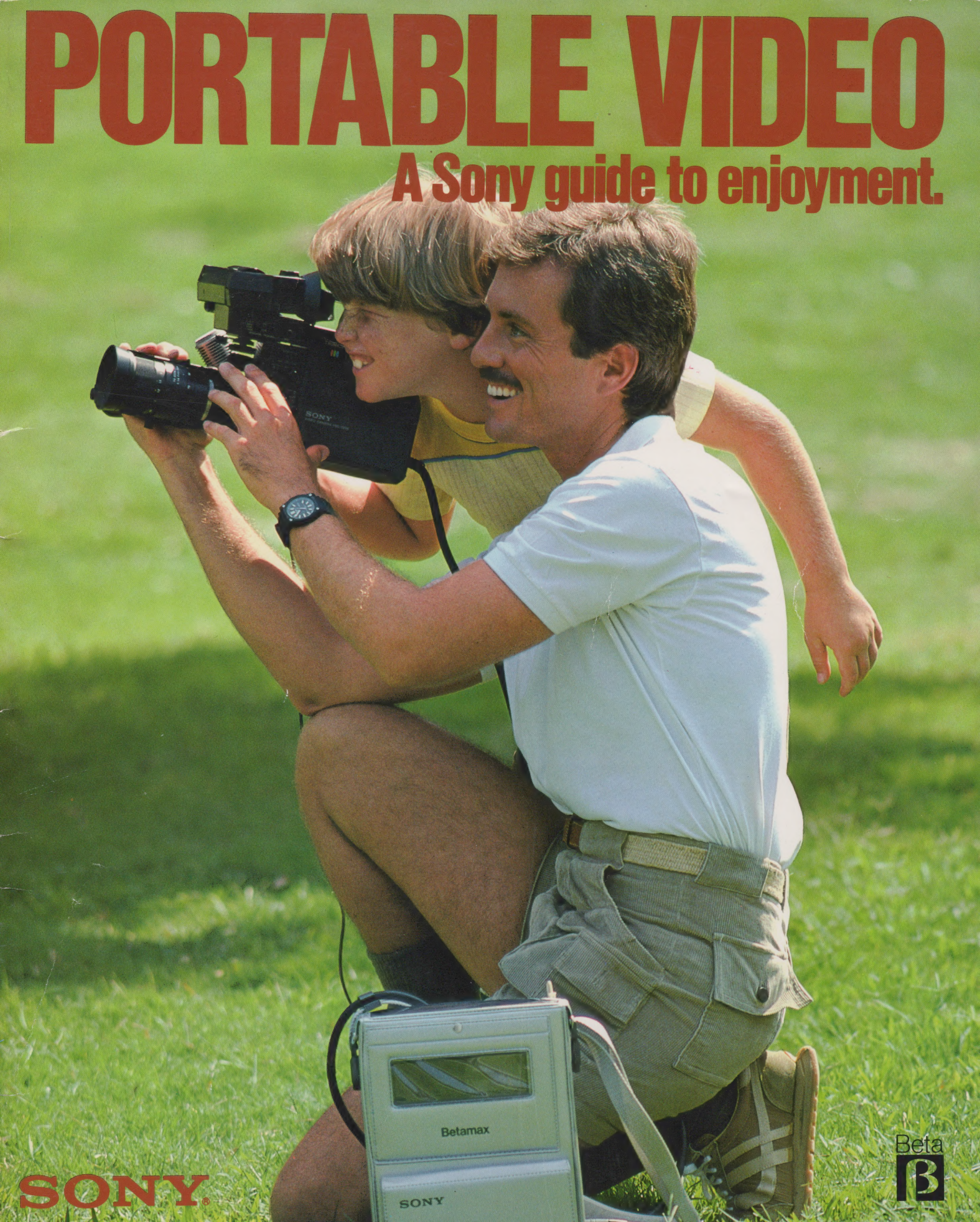
PORTABLE VIDEO

A Sony guide to enjoyment.



SONY

Beta

Betamax
SONY

Dear Home Video Enthusiast,

Congratulations! You are about to enter a world of enjoyment as limitless as your own imagination—portable Video.

Sony's portable video system will certainly let you test your creativity to the fullest. And to help you reach your full potential, we've put together this comprehensive guidebook.

It's chock full of information and hints. No matter what your level of expertise, it will help you improve your shooting skills.

So read through it and keep it around as a handy reference book. Above all, have fun!

Michael Goldberg

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About the Author

Michael Goldberg was born in Montreal, Quebec, 1945, and lives (mostly) in Vancouver, Canada. An active video artist, he has produced numerous tapes, and has written two books ("The Accessible Portapack Manual" and "Broadcasting Small-Format Video—A Survey"), as well as many magazine articles on video. He served as Video officer at the Canada Council, and was a Foreign Visiting Lecturer at the University of Tsukuba, in Japan. Initiator of the "International Video Exchange Directory," he is a founding member of the Video Inn Resource Center.

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1 Features of the SL-2000

LIGHT button
Hold this down to illuminate the liquid crystal display (LCD) of the time counter, for easier reading in the dark.

RETURN button
Press this button when the tape is *stopped,* and the tape will automatically enter fast forward or rewind and stop at the "zero" setting.

RESET button
Press to set the time counter to its "zero" setting.

TIME COUNTER

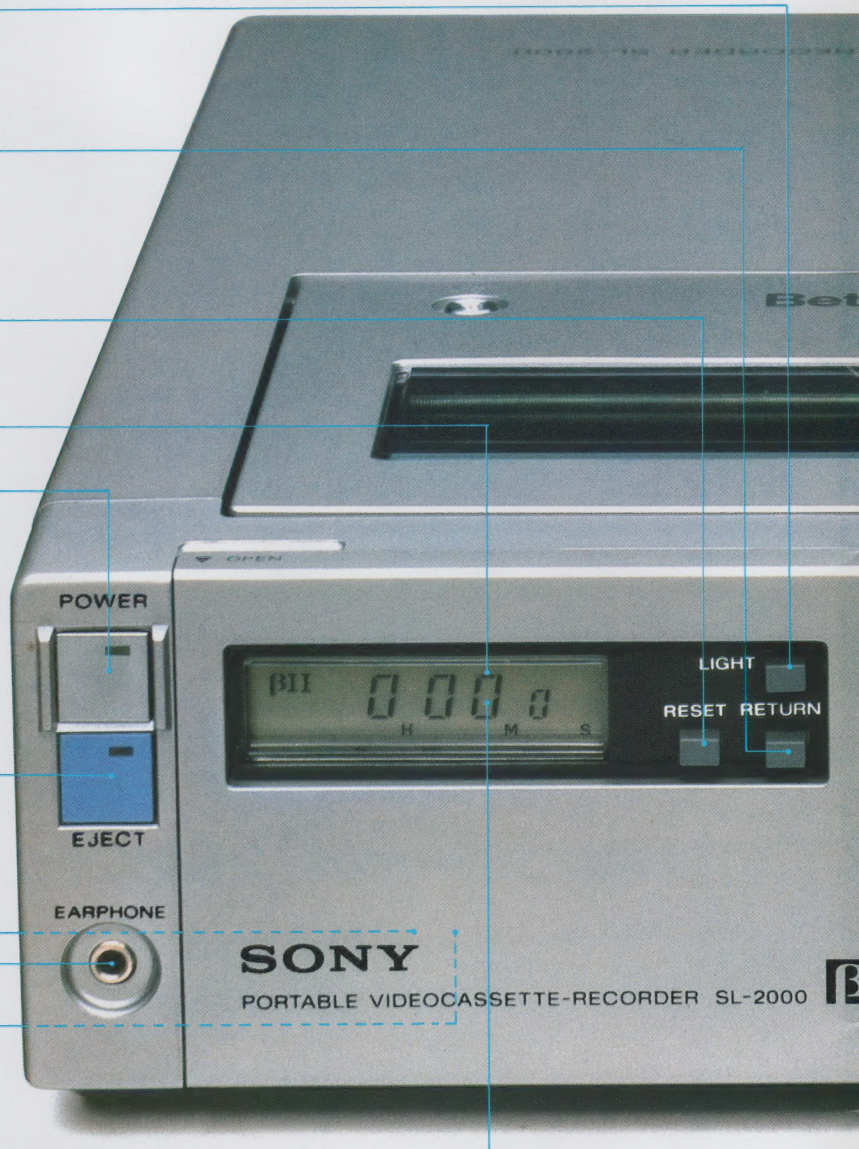
POWER switch
Press to turn ON the power (the lamp lights). To turn the power OFF, press again. When a TT-2000 Tuner-Timer Unit is connected, the power is automatically supplied to the recorder by turning ON the TT-2000 POWER switch.

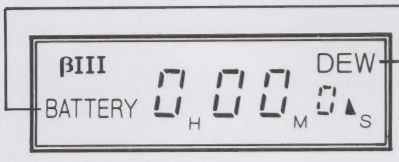
EJECT button
Raises the **cassette** drawer. It does not function when power is OFF.

EARPHONE jack
Plug in an earphone or headphones (with a monaural miniplug adapter) here.

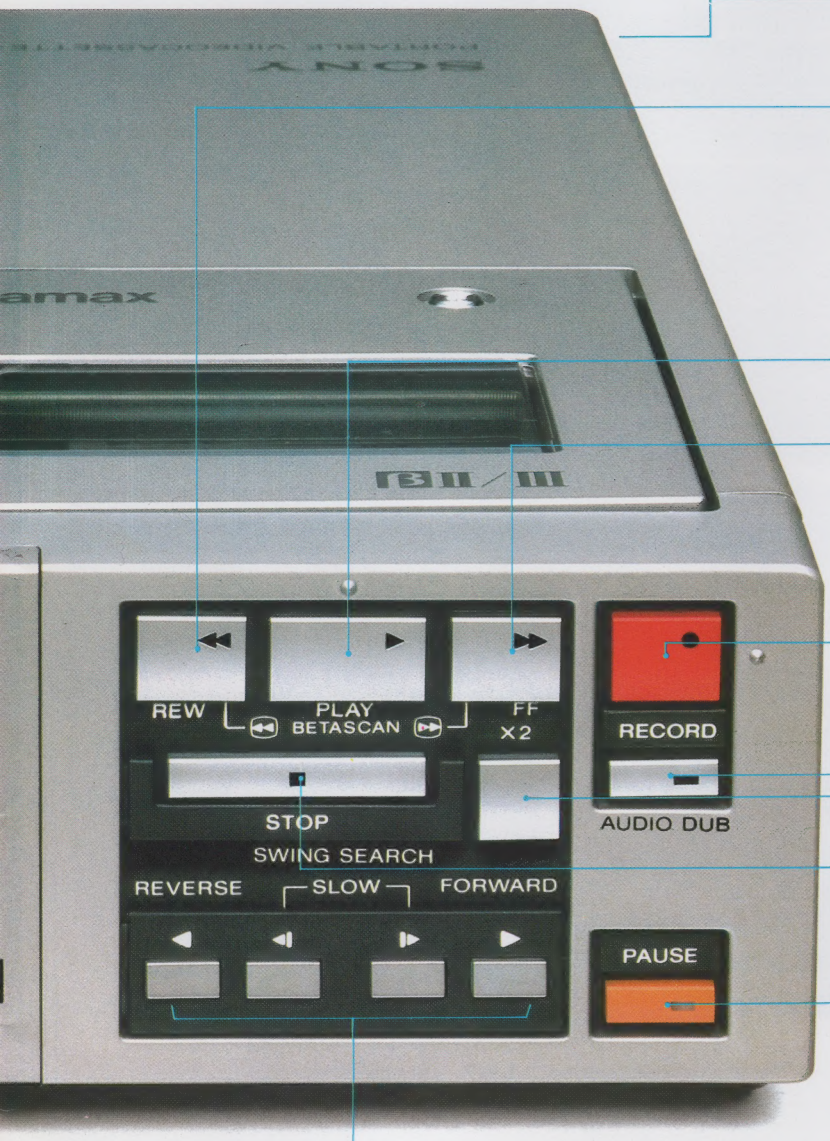
REC MODE (Recording Mode Selector)
Selects BII or BIII recording. During playback the VTR automatically adjusts to the mode in which the tape was recorded (BI, II or III), regardless of how the REC MODE is set.

TRACKING control
If a line of "snow" appears during playback, turn this control to obtain the best possible picture. *Always* leave it in the center position during recording.





Time Display Panel
Indicates the recording mode (BII, BIII), or the playback mode (BI, BII, BIII).
Indicates how much tape has advanced.
Hour Minute 10 seconds
"Battery"-Blinks when the battery is almost completely discharged and should be removed and charged.
"Dew"-Blinks if there is moisture condensation inside the unit. VTR will not run.
Forward tape movement is shown by a ◣ blinking arrow indicator. Reverse movement is indicated by ◥ .



BATTERY compartment & EJECT button
Insert the rechargeable NP-1 battery here. Press EJECT to remove.

◀◀ REWIND/BETASCAN button
In the STOP mode, press once to rewind the tape to its beginning. In the PLAY mode, hold the button down to play back at high speed in reverse while viewing the picture on the screen (BETASCAN). Upon releasing the button, the VTR will automatically revert to the PLAY mode.

▶ PLAY button
Press once to begin playback of your tape.

▶▶ FF/BETASCAN (Fast Forward) button
Press once to advance the tape rapidly. In the PLAY mode, press and hold to play back at high speed forward, with picture playback (BETASCAN). Return to PLAY mode by releasing the button.

● RECORD button
While holding this button down, press the PLAY button to begin recording. If this is done when the camera is connected, the VTR will automatically enter the PAUSE mode and will "standby" until you press the TAPE RUN/STOP button on the camera handgrip, or PAUSE on the recorder. The tape will then start running and recording will begin.

AUDIO DUB button
Use this button to add a new soundtrack on a previously recorded tape without erasing the visual portion of the program.

X2 (Double Speed) button
Press once during playback to speed up playback to twice the normal speed. Press PLAY to revert to normal playback speed.

PAUSE button
During recording, press PAUSE once to momentarily stop recording. During playback, press once to obtain a "still picture" (or "freeze frame"). Press once again to return to the PLAY or RECORD modes.

STOP bar
Press to stop the tape.

SWING SEARCH buttons
After pressing PAUSE during the PLAY mode and producing a still picture, you can then operate the new SWING SEARCH feature of the SL-2000.
For playback at normal speed in the reverse direction, press and hold.
For playback at normal speed in the forward direction, press and hold.
For slow motion in reverse, press and hold.
For slow motion in forward, press and hold.
When you release any of these buttons, the VTR returns to the "still picture" mode.

Features of the SL-2000

DC-IN 12V jack
Connect the optional **AC-220 AC power adapter** or the optional DCC-2400B car battery cord here.

MULTI-CONNECTOR (26-pin)
Connect a TT-2000 Tuner-Timer Unit or a VMC-220A connecting cord here.

VHF OUT connector (F-type)
Connect to the VHF antenna connector of the **TV receiver** using the supplied cable.

RF UNIT selector
Select the output channel of the VHF OUT connector. Set the switch to CH3 or CH4, whichever is "open" in your area.

CAMERA connector (14-pin, K-type)
Connect a video camera, such as a Trinicon HVC-2200, HVC-2000, etc.

MIC (microphone) jack (mini-type)
Connect a microphone here.
If your microphone has a phono-type or Canon (XLR) plug, use a plug adapter.

TT-2000 Tuner-Timer Unit

REMOTE CONTROL UNIT
RMT-311

TIMER INDICATOR

CHANNEL SELECTOR

CHARGE START BUTTON

VTR/TV SWITCH

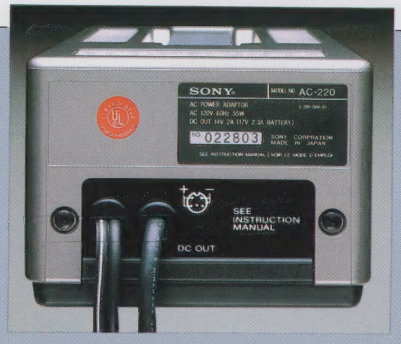
POWER BUTTON

AC Adaptor

AC-220
AC Adaptor allows you to use the BetaPak indoors, using wall current. It also quick-charges the NP-1 battery.

POWER button

CHARGE button
Press this button to start charging the battery



Features of the Trinicon HVC-2200 Camera

VTR TAPE RUN light
This red tally lamp lights up when the tape is running. It tells your subject that recording is in progress. It also lights during playback.

Built-in microphone
This electret condenser microphone is **omni-directional.** It picks up sounds all around the camera with high sensitivity.

Viewfinder lock-nut and screw
The position of the viewfinder can be adjusted forward and back, side-to-side, or swung into packing position to fit in its hard carrying case. It can also be removed for remote viewing with the VFC-6CB extension cord. To loosen, push the lever to the left, then unscrew. Tighten the screw *slightly,* then push the lever to the right to secure.

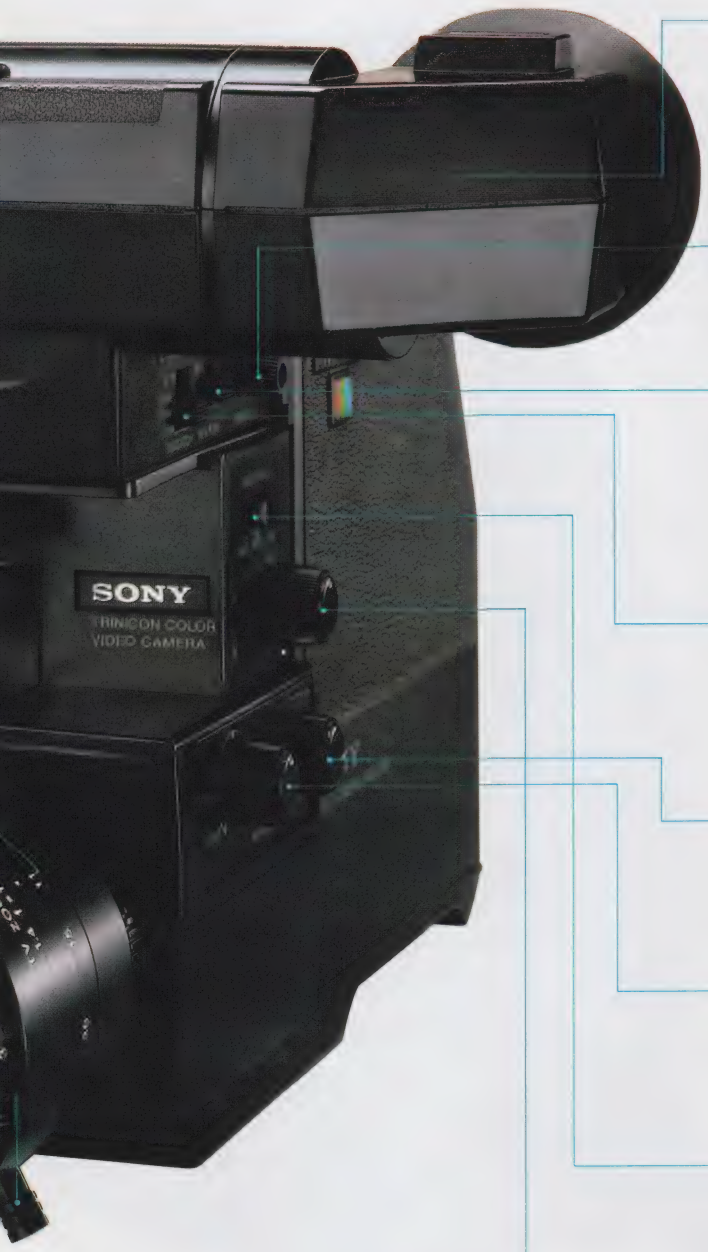
Power zoom button
This control operates the 6-to-1 **electronic zoom** function, varying between WIDE-ANGLE and TELEPHOTO. The zoom motor is so quiet the microphone doesn't pick it up.

Focus ring
Turning this rippled band adjusts the picture focus.

Lens hood
Shields the lens from the sun. It can be removed (to add extra filters), and can turn if loose, so don't confuse it with the focus ring.

Manual ZOOM/MACRO lever
This lever is used to zoom the lens by hand, varying the speed as you wish. The lens can be used for extreme **closeups** in the MACRO setting. Turn the zoom to **WIDE-ANGLE,** then pull the lever outward and continue turning, to focus up close.

Record/Review control
This new REC-REVIEW button rewinds videotape, plays back the last few seconds of your recording, and stops tape automatically for noise-free transition to your next shot.



Electronic Viewfinder

The Trinicon camera's electronic viewfinder is equipped with a 1½-inch black & white TV. With it you can frame the image you wish to record and monitor as you shoot. It also serves as an in-the-field monitor, for playing back the tape. (see p.11 for details)

BRT control

This knob adjusts the **brightness** of the viewfinder monitor, and *does not affect the recorded image.*

PEAKING switch

Focusing in dim light is easier with this switch ON. The subject is more sharply outlined in the viewfinder. It is a focusing aid only, and does *not* sharpen the recorded image. Switch it OFF to see the recording as it actually appears.

Viewfinder INDICATOR selector

This selector changes the indicator lines in the viewfinder. Use **WB** when using the **WHITE BALANCE FINE-tuning; WAVE FORM** to judge the **video recording level;** and **IRIS** when using the **IRIS control**

WHITE BALANCE selector

This has four settings, selecting built-in filters for different types of lighting: 1) iodine and incandescent; 2) fluorescent; 3) bright sun; 4) overcast day.

WHITE BALANCE FINE tuning

After setting the correct WHITE BALANCE filter number, this control can be used for precise adjustment of white and **color rendition.**

SENSITIVITY switch

This switch affects the **video gain** (recording level). Under normal lighting, leave it on AUTO, and the automatic gain control (AGC) will maintain a bright picture. Use LOW to decrease sensitivity on a sunny day; use HIGH to increase the gain in dim lighting.

IRIS control

The IRIS (lens opening, or "f-stop") is adjusted automatically when this knob is pushed in for the auto setting. Pull the button out a bit for VAR (variable) setting, and turn to change the lens opening manually.

Features of the Trinicon HVC-2200 Camera

Attachment shoe
An external microphone can be secured here.

Eyecup
The Trinicon camera eyecup has a built-in 2.8X magnifying lens to help you sharply focus the image in the viewfinder. It can be swivelled up and out of the way, so you can view the image with both eyes.

Electronic FADER button
The FADER gives you professional-feeling fade-in and fade-out transitions of picture and sound at the start or finish of recorded segments.

SHARPNESS switch
Alters the degree of sharpness of the recorded image. There are three settings for SHARP, NORMAL or SOFT focus.

EARPHONE sound selector
Set at MIC position to monitor the sound coming from the microphone, and at VTR to listen to the sound being recorded by the "deck." In PLAYBACK mode, switch to VTR.

Sound indicator
Whenever the **power** is ON, this yellow lamp lights up. It flickers when the built-in microphone is picking up **sound.**

EARPHONE jack
Plug an earphone (or low-impedance headphones) into this jack, to monitor sound during recording or playback.

External MIC jack
Sony recommends the ECM-Z300C Zoom microphone for use as external mike, to record sound selectively.

VTR TAPE RUN/STOP button
Press this button and release to begin shooting. Press it once again to stop recording. (The VTR must be in RECORD mode first.) This button also starts and stops the tape during playback (like the VTR "PAUSE" switch).

LOCK switch
You will prevent accidental pressing of the TAPE RUN/STOP button, when you slide this switch to the left.

REMOTE control terminal
A remote control unit can be connected to the camera, for recording and zooming from a distance.

Hand grip
The molded hand grip makes shoulder-shooting stable and easy.

VIEWFINDER terminal
Connect the **electronic viewfinder's** 8-pin plug here. You can also use the viewfinder **extension cord,** for monitoring the camera from a distance.

Automatic Green Settings
Many of the Trinicon camera's controls have a specially marked "green" position. When set in this position, each function is handled automatically.

Features of the Electronic Viewfinder

A 1½ inch black-and-white picture tube displays the video image in RECORD and PLAYBACK modes. The VTR's power must be ON.

PEAKING switch
When light is low, focusing may be difficult. The PEAKING control sharpens the **viewfinder's picture** contours, as an aid. Also, when this switch is ON during **fading,** the image remains visible in the viewfinder.

1.

2.

3.

4.

5.

1. **WHITE BALANCE**
When the viewfinder is switched to WB, this white line appears on the screen. While shooting a white image, or with the white lens cap over the lens, adjust the camera's WHITE BALANCE control. The line should move as far to the *left* as possible.

2. **WAVEFORM**
This WAVEFORM indicates which parts of the image are bright and which are dark. If the line disappears off the left side of the viewfinder screen, that part of the image *may be too bright* for clear rendition.

3. **IRIS**
When **IRIS** snd **SENSITIVITY** controls are in **AUTO** position, the iris automatically opens and closes to maintain even brightness. When the "needle" in the viewfinder moves to the left, the iris is closing; to the right, it is opening.

4. **Tally for tape run & low battery warning**
This **red lamp** lights up when the tape is running (advancing), either while recording, or playing back through the camera viewfinder. There is also a tally lamp on the front of the camera, to tell your subject that recording is underway. When this lamp blinks on and off, you have about 30 seconds left to record, as the battery is almost completely discharged.

5. **IRIS Dim light warning lamp**
This **yellow lamp** lights up when the IRIS has opened wide and video gain is at its limit. The recorded image below this lighting threshold will be quite dim.

Before you start shooting, there are several "essentials" you had better be acquainted with. Zooming, focusing, tilting, panning, walking with the camera . . . you will no longer be a beginner after you read through these following chapters.

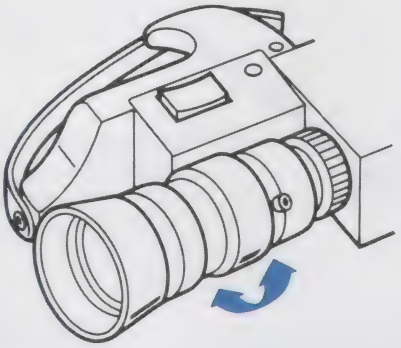
2 Zoom

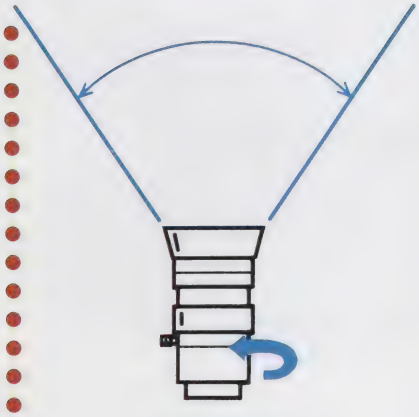
When TV first began, several lenses had to be used on the camera to change the shooting angle. Now the zoom lens can be adjusted from WIDE ANGLE to TELEPHOTO with the turn of a finger, passing through all the angles between.
(The zoom ratio of the Trinicon camera is 6:1, from 12.5mm to 75mm)

The Trinicon camera features an **electronic zoom,** which gently changes the viewing angle. (It takes 12 sec. max.) Conveniently located on the hand grip, you can control it with your right hand while you focus with your left. You can also manually zoom at any time; the zoom ring has a handy control lever for steady turning.

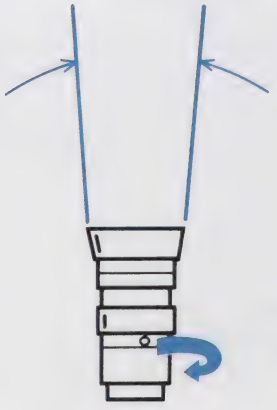
The HVR-2000 remote control unit for the camera also has a rocker-switch for electronic zooming and pausing or starting tape movement. You must adjust the focus manually.

Use the optional conversion lenses (VCL-1558A, tele, or VCL-0758A, wide) to lengthen or widen the focal distance. With telephoto, far away objects show close-up, like a telescope. It is really useful to record events when you can't be close to the stage or field of action. Take care: any slight movement of the lens will shift your subject out of frame; a tremor of your hand will appear like an earthquake. Steady the camera, or use a tripod.





ZOOM OUT
(WIDE ANGLE)



ZOOM IN
(TELEPHOTO)

When "shoulder shooting," some people zoom in and out constantly, which can make the viewer "see-sick." Learn to hold the camera as steady as you can. Conversely, when using a tripod (e.g., recording someone talking), too often the camera is left unattended. Use the zoom to emphasize important points, and vary the framing from time to time to maintain viewers' interest.

3 Focus

Your main subject should *usually* be in center screen, clearly in focus. Keep your fingers on the **focus ring,** adjusting it for clarity whenever necessary. This is crucial whenever you or your subject is moving and the distance between you changes.

If you and your subject stay put, here's a tip: before you start to shoot, **zoom "in"** (to maximum *TELEPHOTO*) **focus,** then **zoom "out"** (to *WIDE ANGLE*). Now shoot; it will stay in focus. If you focus in wide angle and then zoom in, chances are you will be looking at a fuzzy blur.

If you have difficulty focusing in **dim light,** use the viewfinder's PEAKING switch. Turn it off after focusing, to see the lighting as it will actually be recorded. Don't forget, you can also adjust the TV-monitor at home, to get somewhat better contrast during playback.

4 Depth-of-Field

In **bright light,** the lens IRIS (opening) automatically closes somewhat, much like the human eye. In this "stopped down" condition, you will find that *more* of your subject is in focus than when the lens is "wide open." Depending on the amount of light, you will find objects in front and/or in back of your subject will be in focus or fuzzy. This phenomenon is called "depth-of-field."

Some objects may actually be more interesting when shot out of focus, like many flickering lights, or leaves moving in the foreground as you shoot someone farther away.

You can control the depth-of-field to a certain degree by changing the lighting and using the Trinicon camera features: (1) Switch the INDICATOR to IRIS setting. You will have more depth-of-field when the "needle" is on the left. (2) Use the IRIS control in VAR setting to manually adjust the lens opening. (3) Switch the SENSITIVITY selector to HIGH to increase the recording level (or to LOW, if you want less focal depth).

You can move *closer* to your subject with your lens in **"WIDE ANGLE"** to be well in focus, the closest you should normally be is 0.8m. (about 2½ ft.). Children have a habit of coming right up to the lens, which you should discourage by explaining that you can't see them clearly so close.

5 Tilt

Often the subjects you shoot will be in motion, and sometimes they will be inanimate. You can add interest and flow to your shooting with camera movement. Slowly pointing the camera upward while you are recording is called "tilt up"; the opposite, "tilt down."

A good idea is to decide on the tilt shot and practice before you start recording. It will enable you to execute the movement smoothly without appearing to wander. For example, you might start by shooting a tape's titles from cards on the ground, then tilt up to the action.

6 Pan

Turning the camera, side to side, parallel to the ground, is known as a "pan." You should usually pan fairly slowly, as it is difficult to watch a quick sweep of the panorama on a TV screen. In an **interview** situation, for example, pan back and forth, catching the person speaking or a "reaction shot," and sometimes zoom out to show both people. You will pan a lot when shooting sports events; don't overdo it.

In panning, the camera remains stationary. When the camera actually "travels" (with tripod wheels), it is called **dollying.**

The Trinicon camera rests on your shoulder, mini-viewfinder on its side, much like a professional TV camera, and quite different from hand-held super-8 imitations. It weighs only 2.9 kg (6 lb. 6 oz.), so it's easy to move about, recording whatever your eye sees. But you need not limit your viewpoint by shoulder-shooting all the time. When you change the height and position of the camera, you can dramatically add to the mood of your recording.

Perspectives

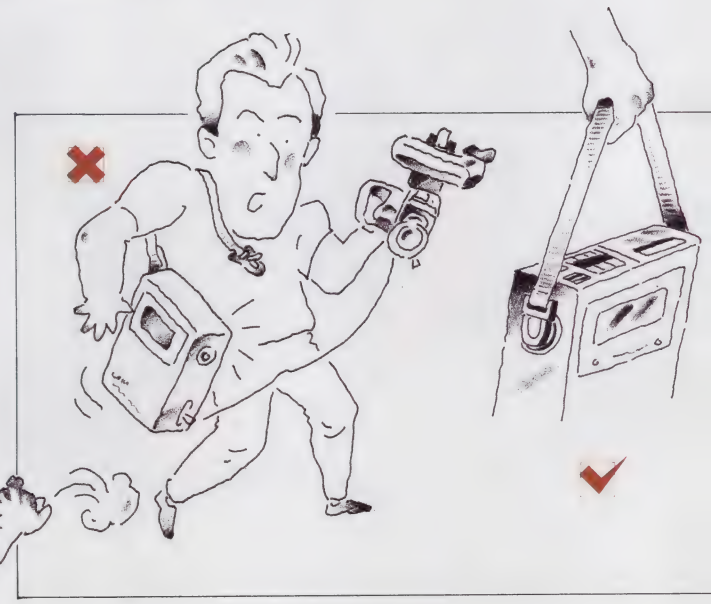
When children use the video camera (it's easy!), you will be reminded of how the world appears from their height. Try putting the camera right down on the floor, or in the grass, or hold it high above your head (handy when in a crowd). Using the Trinicon viewfinder extension, or a TV set, you can "monitor" what the camera sees from a distance. The Trinicon camera allows you the unique possibility of extending your vision beyond the usual frame of the human eye. In fact, you can put the camera in places you couldn't possibly fit yourself!

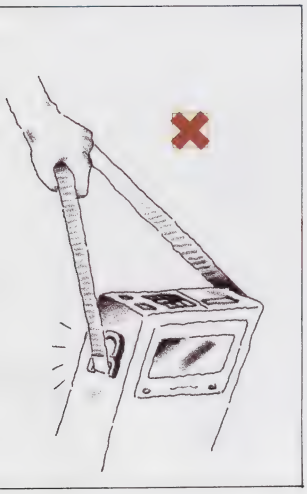
8 Walking with Camera

Bet you never thought you'd learn how to walk again! The fact is, when we walk normally, we bob up and down like a cork in water. A video camera should move more smoothly; if the picture hops, viewers can quickly tire of it.

Start with your knees slightly bent, not straight and stiff, then move with the camera parallel to the floor. Walk slowly and steadily, keeping your balance. Of course this is not a hard and fast rule; move in your own personal way.

Keep your eye on the viewfinder, concentrating on what you're "shooting." Later on, other viewers will be watching exactly what you now see in the small viewfinder monitor. If you're worried about where you are walking, open both eyes from time to time — still holding the camera steady.





Use the (optional) **camera extension cable** (CCK-5, or CCK-10) for real ease of movement.

With the (optional) **viewfinder extension cable** (VFC-6CB) you can "use your head" to shoot over a crowd.

Don't pick up the case with the strap's clip upside-down. Always ensure that the clips are securely fastened before lifting. Hold the deck when you run.

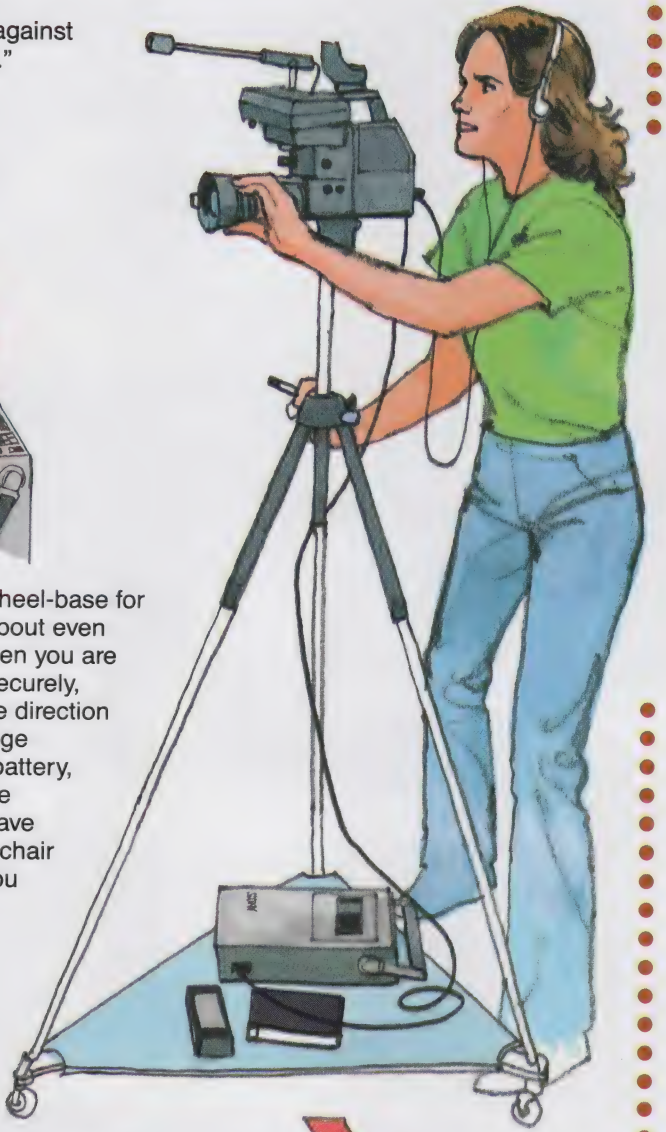
9 Tripods

"Tri" is from Latin, meaning "three," and "pod" comes from the word for "foot." Three extra feet are as good as a helping hand.

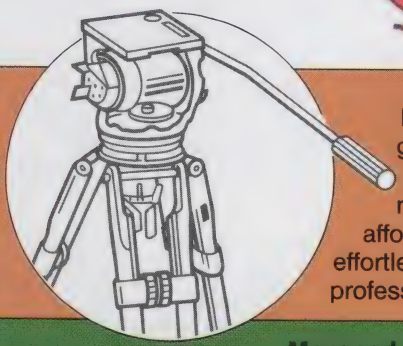
When using a tripod, be sure the legs are tightened and of equal length. The camera should be on straight, securely screwed. The picture in the viewfinder should be horizontal, unless you purposely desire an angled image for effect. Hold the tripod "arm" securely, for smooth panning and tilting.

Always secure the camera tightly on the tripod receptacle. Always turn the handle to tighten the tripod head *before* walking away from it. Do secure the tripod dolly's wheel **brakes** if you don't plan to move it around.

By steadying your arms and legs against a solid object, you become a "tripod."



By attaching a dolly–a wheel-base for the tripod–you can move about even while you are shooting. When you are "dollying," hold the tripod securely, especially if you change the direction you are moving (don't change abruptly). When using the battery, you can put Betamax on the dolly if you add a tray. Or have a friend "dolly" you in a chair with wheels. Then you are truly mobile!



Fluid head tripods use a greased ball-bearing top for very smooth camera movement. If you can afford one, camera flow is effortless, and the result has a professional touch.

Monopod — A single leg, light and portable.

10

Framing

Compose and vary

MACRO

FULL SHOT

3/4 SHOT

SHOULDER SHOT

CLOSEUP

Like an artist, you are constantly placing a variety of shapes, colors, and movement in your picture frame. In fact, museums show tapes by video artists. If you pay attention to what you are looking at, and try to make it interesting to the viewers, you and they will enjoy it all the more. Here are some framing concepts, from basic to creative . . . variety of shots is the key!

11 Following the Action

When there is a lot of activity, you can't record it all. Nor should you swing the camera indiscriminately from one point of interest to another. The result would just confuse the viewers. Your goal should be to follow a particular action and make it clearly understood from beginning to end. Each action has a "lifespan," like a paragraph or chapter in a book.

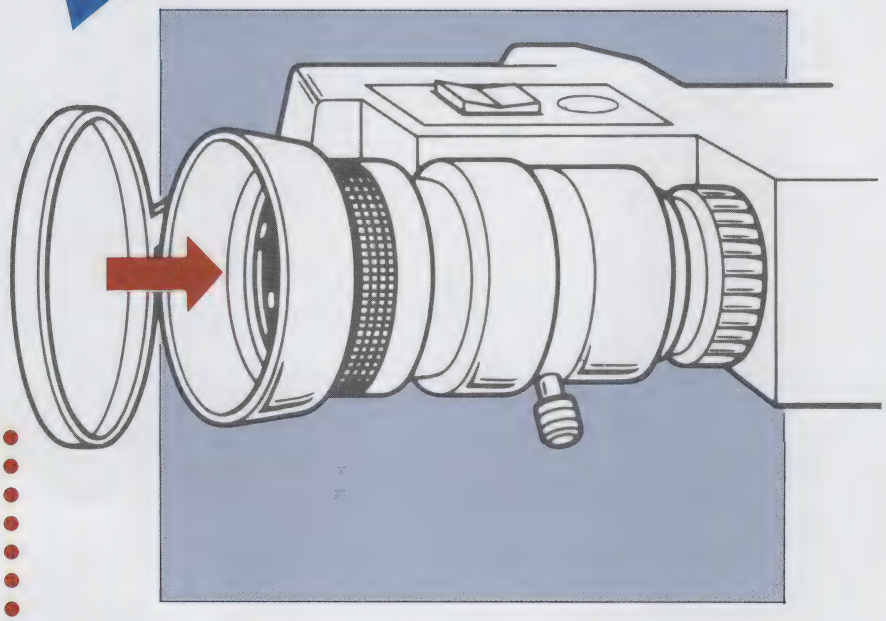
For example, you shot the knife cutting the birthday cake. Your next choice should link up well, perhaps an edit or zoom to the kids eating, with icing all over their hands and faces. In this way, you *make* a story as you document an event. Don't worry too much about action that you are missing; life's like that. Try to make the bit you are shooting enjoyable, and your tapes will be more interesting overall.

One of the advantages of video is that you can shoot for hours, in "real time." (In the Beta III mode, you get 5 hours of continuous recording on an L-830 cassette.) You can also erase a section you are not happy with, and record something new in its place. But don't have your subjects follow "acting" directions, or repeat something you missed. It'll lose the natural spontaneity that video captures so well.

Now you're ready. Grab the camera and shoot, indoors or out. All you need do before or in the process of shooting is described in the following pages.

12

White Balance

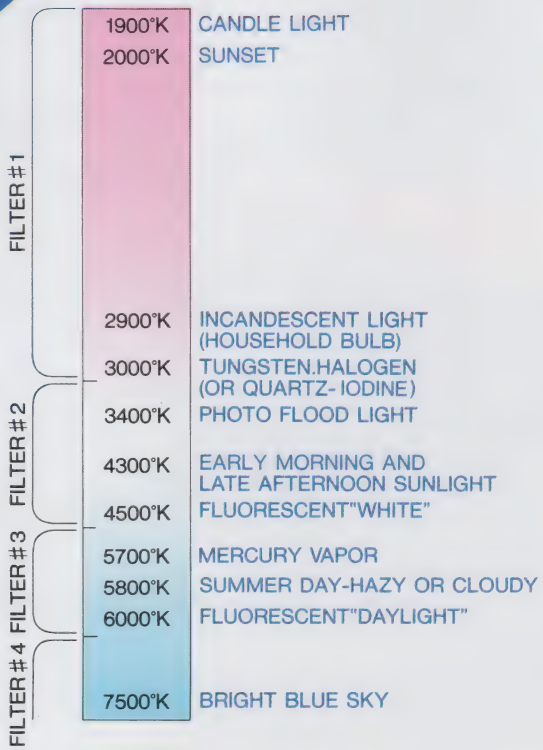


For proper color, you must first set the WHITE BALANCE selector to the setting which best matches the lighting conditions you are shooting in.

For precise fine color adjustments, point the camera at a white object such as a white card placed in the lit area where your subject will be. Zoom in to TELEPHOTO and fill the viewfinder screen, turning the lens *out of focus,* for an even, white picture. Set the viewfinder switch to WB, then turn the FINE adjustment so that the vertical line in the viewfinder moves as far to the *left* as possible. (This is a "reflected light" adjustment.)

If it is not possible to do the above, you can instead use the translucent white **lens cap.** *Cover the lens* with it, point the camera toward your subject or toward the light source (not too close!), and adjust with the FINE knob. (This is an "incident light" adjustment.)

13



Color Temperature

Under different lighting conditions, white objects take on subtly different tints, often imperceptible to the human eye. All colors change a bit, in fact. (For this reason, there are different photo films for indoor and outdoor use, and professional photographers use a variety of filters to compensate.) White light may be "cold," i.e., bluish (such as fluorescent fixtures), or "warm," i.e., reddish (like the setting sun). This characteristic is called the "color temperature" of the light. It is measured in **degrees Kelvin** (written "°K").

Set the camera to the proper WHITE BALANCE filter setting.

If you are not sure of the color temperature of your lighting, try the WHITE BALANCE procedure above for different filter wheel settings, and use the filter which gives you the best result.

In **low light,** the indicator line in the viewfinder may not move. Set the SENSITIVITY selector to "high," then adjust the FINE setting. At very low light, leave it on the "green" setting; as with the human eye at night, colors will appear fairly weak. The Trinicon camera is surprisingly sensitive in dim light, and will not "ghost" much at all.

In **mixed lighting** (e.g., sitting by a window in a room with fluorescent light), it is difficult to get one exact color range. Use the green setting. For best results, connect a TV monitor (via "RF" or the "dubbing cable") and adjust the filters and FINE color adjustment to your taste. Skin tones are more important. You should adjust the TV monitor using color bars (see below), or by watching another, well-recorded color tape first.

Except for a few potentially dangerous "don'ts," which are stressed elsewhere in this book, for creative video recording don't strictly follow "how to" formulas. For example, it's not "correct," but if you use the wrong filter, the mood can be interesting.

14

Color Bars

There are only 3 colors on your TV screen, believe it or not: red, green, and blue. These primary colors of light blend in our eyes and brain, so that we see a whole spectrum of hues. On a TV set, red tends to dominate; yellow is the most elusive.

You can use a standard color bar card to adjust any TV set or video monitor before playback, as the pros do, for best possible color rendition. Follow the color bars on the left closely.

When you first buy a set of tapes, set up the card, and record about 20 seconds of color bars at the start of each tape. During this, you can stick on the blank labels and number the cassettes. It'll save time and possible frustration later.

Do a WHITE BALANCE adjustment.
Record the color bars.
Adjust the TV or monitor

15 Lighting

You can record with good results in a wide range of lighting levels and conditions. Natural light looks the most real, and has the advantage of keeping your subjects at ease. However, in a dim room, or for controlled lighting conditions you may wish to add lighting. Below are four basic setups.

① The **key light** is placed in front of your subject, between 30° and 45° off center. It is the principal source of illumination in a multiple-light setup. Watch out for a strong shadow, if your subject is right against a wall.

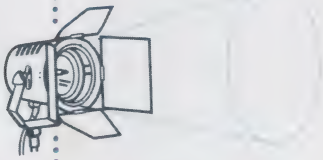
② The **fill light** is next in importance, as it sets the mood, filling in shadowed areas. It is set in front, opposite the key light, and usually is not as bright. (Place it farther back, use a **flood light,** or "bounce" it off a white card, a wall, etc.)

③ **The back light,** usually well above and behind your subject (again, off center), outlines their contour, catching highlights of hair, etc. It too may be "bounced."

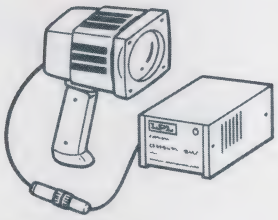
④ A soft **background light** may be added, to lessen shadows from the front lights and add to the mood. (You can buy color **gels** at a theater lighting supplier.) It is aimed at the wall behind your subject.

floodlight

spotlight

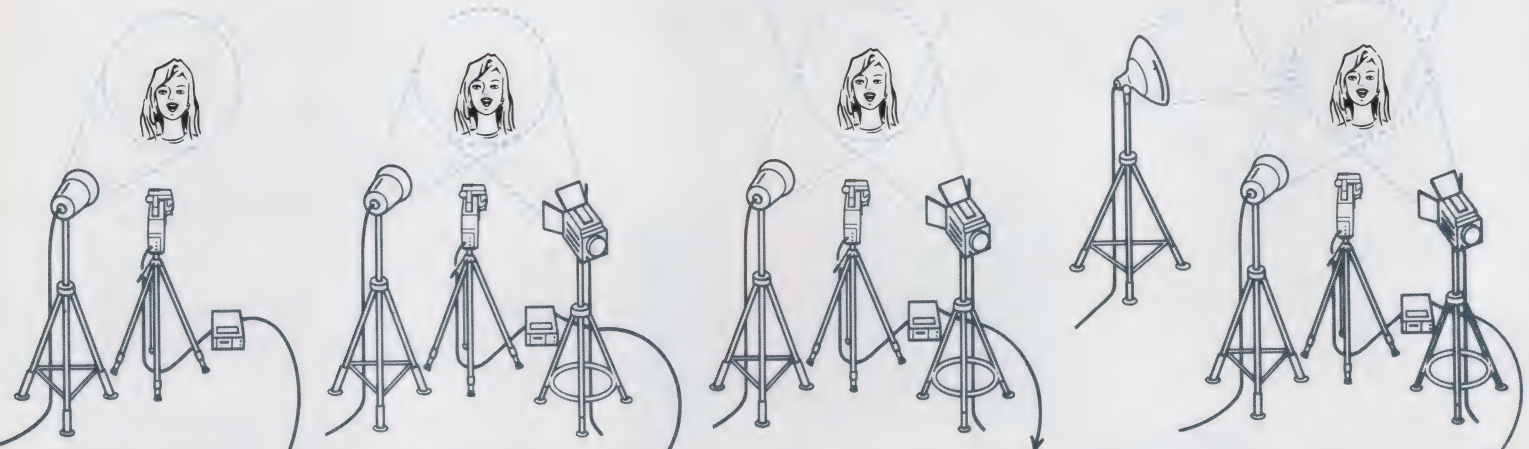


barndoors



battery light

?

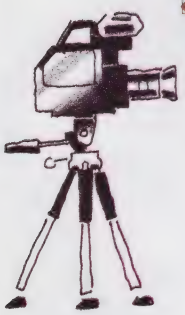


1 . . . KEY LIGHT

2 . . . PLUS FILL

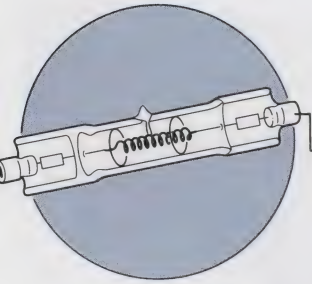
3 . . . PLUS BACKLIGHT

4 . . . PLUS BACKGROUND



The room will heat up quickly with such artificial lights. Switch them off when not recording. You may wish to have a bit of talc (baby powder) for your actors' faces, to avoid shine from perspiration.

Never touch a hot lamp with your bare hand; use a cloth to avoid burning yourself.



Don't ever touch a "sungun" bulb even if it is cold; natural oils on your fingers will cause it to burn out quickly when lit.

The Trinicon camera reacts to bright light by shutting down the iris, otherwise the video pickup tube would "burn" (as would our eyes if we stared at the sun). In any event, *never* point the camera directly at the daylight sun, any bright source of light, or their glaring reflections. Beware of closeby photographers popping **flashbulbs** directly into your lens. *Take special care when using the "manual" iris setting (VAR),* as it won't then shut down automatically in bright light.

Since the Trinicon intensifies recording sensitivity in dim light, even small, bright lights in a **dark room** can cause **burns** on the camera tube. Don't leave a video camera pointed at such very contrasty lights for too long. Move the camera to and fro a bit before shooting. If the lights leave behind a "trail," don't leave the camera on a tripod aimed at them. If any light source leaves a dark trail when you move the camera, *don't* point the camera right at it. (See "Trouble-shooting," under "burns.")

As an extra safety feature, the Trinicon camera has a spring mechanism which closes the **iris** down completely when power is turned OFF. Still, you should develop the habit of putting on the lens cap each time you stop shooting.

16

Video Level

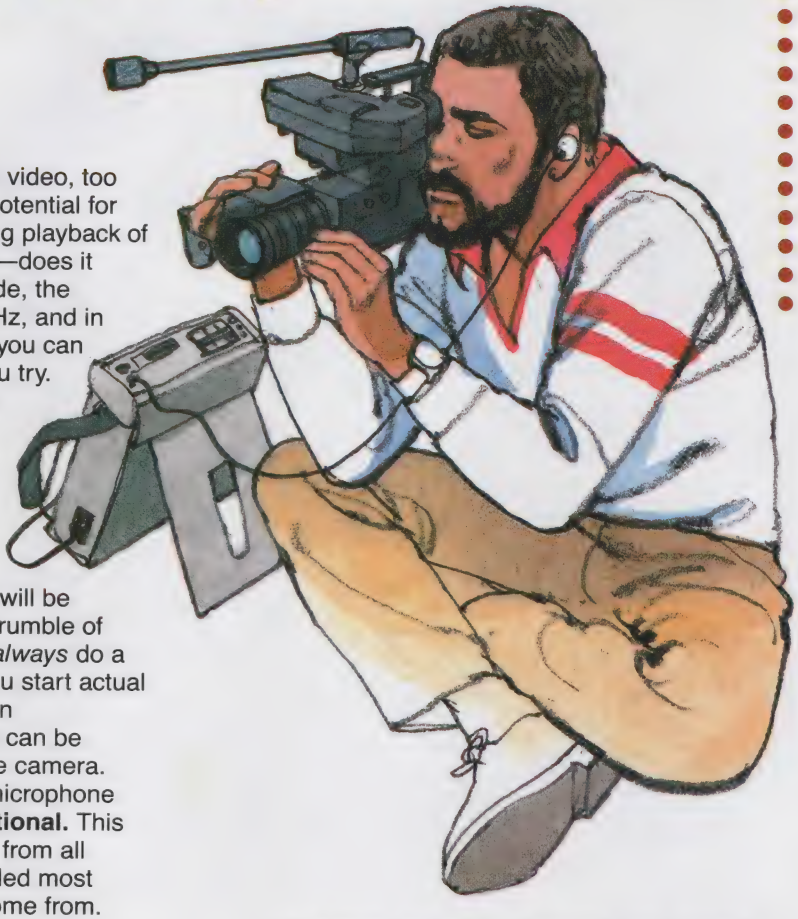
The Trinicon camera has an Automatic Gain Control **(AGC),** which continuously regulates the video recording level, at illumination between 35 and 100,000 lux (3.5 to 10,000 footcandles). The AGC is like a photographic "light meter," sensing the overall picture for optimal recording level.

If a small, bright object enters the picture, the total "light reading" goes up, causing the automatic iris to shut down, and the recording level is adversely affected. In such a situation, your subject may appear darker than you wish. Place yourself with light sources behind you rather than facing your camera, and try to shoot keeping bright objects out of your frame. You can check the high and low peaks of your video level by switching the viewfinder to WAVEFORM. This can be a help when setting up lighting.

You can compensate somewhat for light in the frame that is too bright by adjusting the manual IRIS (VAR) and SENSITIVITY controls. Or perhaps you will find your subject's silhouette interesting, and leave it as it is.

17

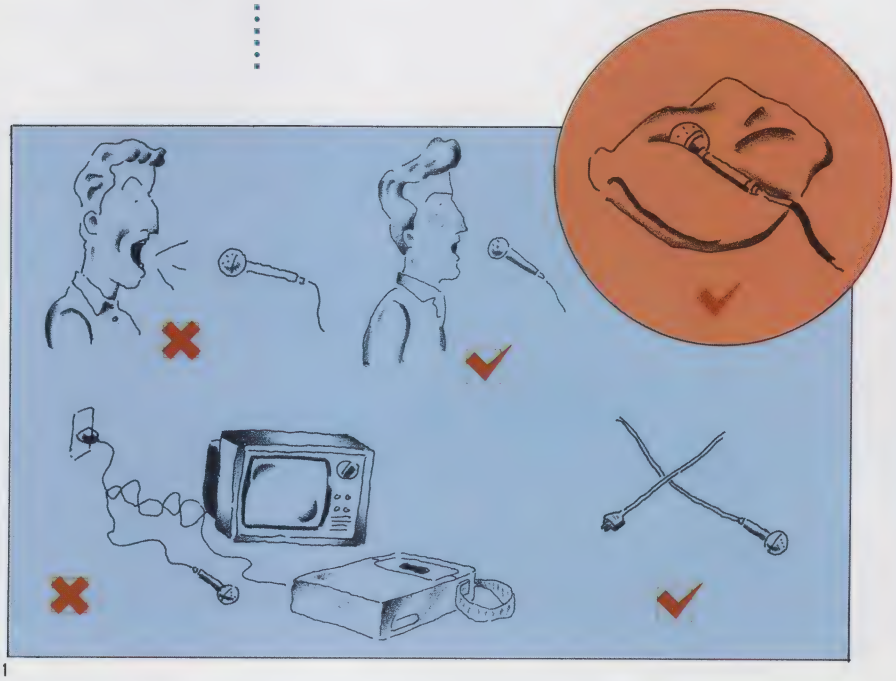
Audio-recording



Sound is an important element of video, too often neglected, and with much potential for enjoyment. Close your eyes during playback of your practice tape and listen to it—does it *sound* interesting? In Beta III mode, the **frequency range** is 50 to 7,000 Hz, and in Beta II, from 50 to 10,000 Hz, so you can get a quality audio recording if you try.

The Betamax has built-in audio **AGC** (Automatic Gain Control), which "brings up" quiet sounds, and prevents loud ones from distorting the recording. *Before* you record, listen carefully. Even the background noises you don't usually pay attention to will be recorded—**air conditioning,** the rumble of traffic, etc. You would be wise to *always* do a minute of test-recording before you start actual shooting. Listen to the playback on headphones or an earplug, which can be plugged into either the deck or the camera.

The Trinicon camera's built-in microphone is very sensitive, and **omni-directional.** This means it picks up sounds equally from all directions—the loudest are recorded most distinctly, no matter where they come from. This "wild sound" actually gives you a real feeling of the audio environment in which you are recording.



For more control over sound, you should have one good, external microphone (see page 33). When you plug it in, it will take over the recording from the camera microphone. A **directional microphone** allows you to point at the subject you are most interested in. The closer you are with the mike, the better the sound quality. If you put the mike down to record, place it on something soft. Use the microphone's foam **windscreen** to avoid "scratchy" sound in the wind.

If the VTR is connected to a **TV-monitor** while you are recording, *turn down the volume* to avoid audio **feedback.** This irritating, high pitched squeal occurs when sound comes back into the mike from the TV speaker.

When recording extremely **loud sounds** (like live rock-music), you should wrap the mike in extra baffling, like a towel, to prevent scratchy sounding distortion caused by volume "overmodulation."

Don't interwine audio and **AC** (power) cords, or you will likely pick up a "hum." You should be all right if they cross at right angles, but keep them separated if you can.

If ever you want to record **silence,** plug an earphone into the EXTERNAL MIC jack.

18

Interviewing

When they are "shooting," TV and film people often pretend they aren't really there, when in fact their presence can affect the situation. The microphone built into the Trinicon camera will clearly pick up your voice when you talk while shooting. You *can* indeed participate in goings-on as you record.

Sound quality will be better, though, if another person takes care of audio, listening with headphones and holding the mike. (You may find it makes video shooting generally a lot easier if a friend helps you by carrying the Betamax while you use the camera.)

In an interview situation, the subject should stand away from any distracting background, if possible. The interviewer should point the mike directly toward the person talking, including him or herself when asking questions. You can help put your subject at ease by playing the recording back on the spot; and you can then check and re-record parts you're not satisfied with.

Hold the cord as shown.

19 Microphones

A good quality microphone will greatly enhance your video recording. A **directional microphone** allows you to capture sound most clearly from the direction you point it. It lowers the chance of recording unwanted, loud sounds coming from other places. **Cardioid microphones** (with a heart-shaped pickup pattern) such as Sony's F-V3T dynamic microphone is excellent for interviewing. Electret condenser microphones record music well while others like the tiny **lavalier microphone** (or "tie tac mike"), respond well to voice.

Sony manufactures a wide range of high quality microphones (use only **low impedance** mikes, around 600 ohm); but you may require an adapter cable (Canon/or XLR-to-miniplug).

The ECM-31HVC is ideal for the Trinicon camera, with its telescoping arm and short cord. A miniplug extension cable turns it into an interview mike.

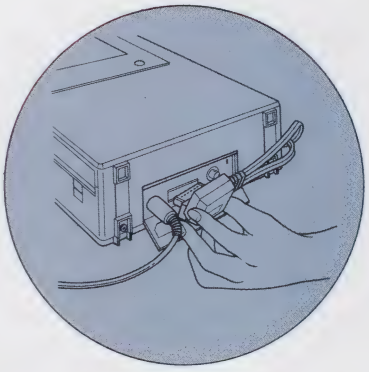
You might also consider a **parabolic reflector** which scoops sounds from a distance, reflecting and collecting them into a microphone. With it you can turn an ordinary hand-held mike into a highly directional one.

The ECM-Z300C **zoom microphone** clips on top of the camera. It can be adjusted from cardiod (interview) pickup pattern to directional ("shotgun").

A **wireless microphone** makes interviewing and music recording from a distance much easier. Check with your Sony dealer for availability.

Sony makes a battery-operated, portable **audio mixer**. The MX-10L has four inputs, "microphone" or "line" level, and 2 channels out. With it you can achieve professional sound balance with several mikes, and can also mix live and recorded audio sources (e.g., for dubbing).

20 Audio-dubbing

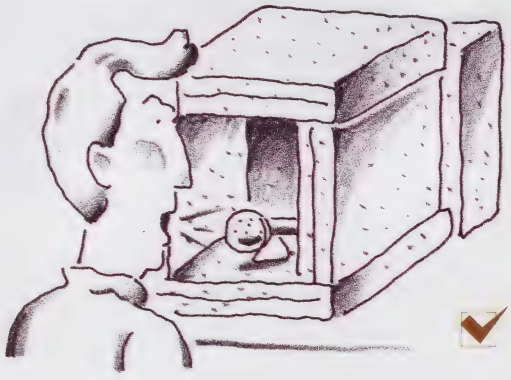


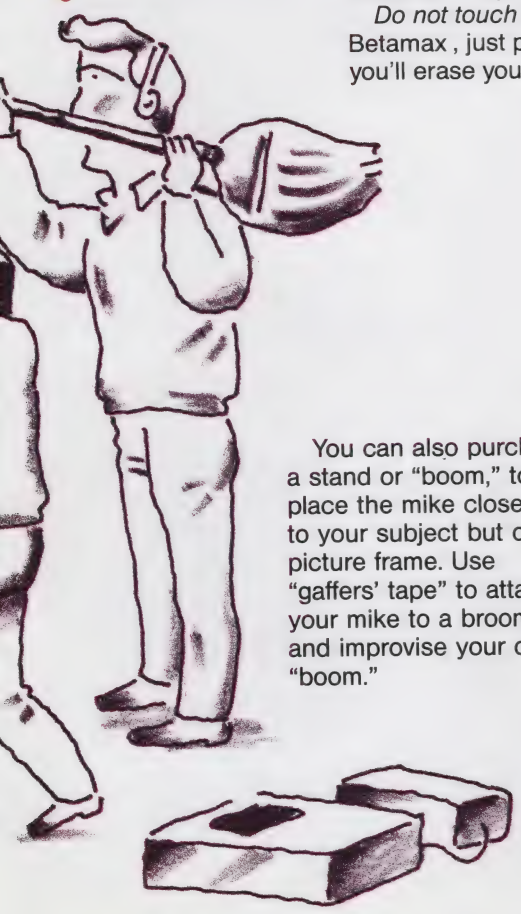
After you have finished shooting a tape, you can substitute new sound for the previously recorded track, in whole or in part, using the audio DUB feature on Betamax. The old sound track will be erased in the sections you "audio dub." For example you can use it to add comments, set a mood with music, or record audio "credits" in the ending of your program.

Plug in a microphone, use a sound source such as a record or tape player (with the dubbing cable), or for controlled, truly professional results, use the MX-10L audio mixer to blend several sources. If you don't have the dubbing cable handy, you can get fairly good results dubbing music by placing the microphone about 15cm (6″) from the player's loudspeaker.

Do a test recording with various (low) volumes. Shh....recording in progress! Take your phone off the hook. To minimize reverberation, place the mike in a "baffle" made of cushions. At a pinch, you can even use the camera's built-in omni-directional mike for audio dubbing.

Do not touch the RECORD *button* on the Betamax , just press AUDIO DUB and PLAY, or you'll erase your picture as well.





You can also purchase a stand or "boom," to place the mike close to your subject but out of picture frame. Use "gaffers' tape" to attach your mike to a broom handle and improvise your own "boom."

21 Audio-playback

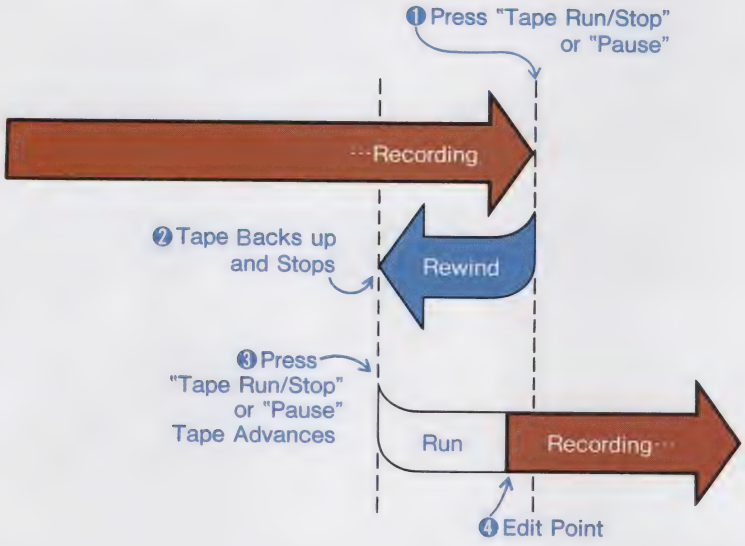
The sounds of your children's concert, nature hikes, off-air recordings, etc., can be enjoyable and interesting. You will enhance the fidelity of your video recording if you play it back on a quality sound system rather than through your TV's tiny speaker. Try hooking Betamax up to your stereo, to see how much improved it sounds. Sony sells a high-quality Trinitron TV monitor called PROFEEL, which is designed as a separate component for easy hook-up with your stereo system.

You can use an adaptor jack (stereo-to-monaural miniplug) to plug in headphones, to listen carefully to playback (or monitor recording). For best audio response, use low impedance headphones (around -20 dB).

22 Edits

It's possible to keep shooting for hours on end with video, so it is important to know when to stop . . . What to shoot and *what to leave out.* That's the secret of successful editing and an interesting tape.

When you press the TAPE RUN button on the camera grip, a stable "cut" joins one scene to the next. Sony has incorporated Timing Phase (TP) circuitry into the Betamax "deck" which automatically backs the tape up slightly, and actually EDITS in the start of the next scene just before the end of the previous section recorded. Although you lose 2 frames, or 1/15 sec. of the previous scene, it completely eliminates the appearance of any picture "noise" between shots. Even when power is shut OFF between scenes, the **assemble edit** will be smooth.



There are numerous edit transitions possible:

1) **Cut** — just press the TAPE RUN button or VTR PAUSE;
2) **FADER** — to fade picture and sound together;
3) **(VAR) IRIS** — to fade picture only;
4) **Fade to white** — cover the lens with the cap, paper, your hand, etc.;
5) **Focus** — go out of focus and cut; go back into focus *after* you cut-in the scene.

You cannot **insert** video into the middle of a previous recording; the start will be clean, but a portion of your picture will be erased at the point you stop. You *can,* however, insert sound cleanly in AUDIO DUB.

23 Fader

The electronic FADER function allows you to fade both *picture and sound* in or out, with the flick of a switch.

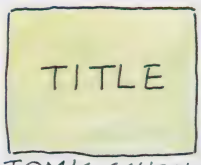
The FADER switch is located on the back control panel of the camera. Switch it ON to put the FADER in **standby** mode. When you press the TAPE RUN/STOP button, the recording will fade-in if you are starting and fade-out if you have been recording. After fade-in, if you don't want to fade-out, switch the FADER button off *before* pressing TAPE RUN to cut-out. The picture will disappear from the viewfinder after you press TAPE RUN button.

camera steady. Put the PEAKING switch ON if you prefer to have the image remain in the viewfinder while the recording fades. When the red recording light goes out, fade-out is completed.

You should know that if you use the VTR PAUSE button to control tape run rather than the START/STOP button on the camera, the fader will *not* work.

Don't overuse the FADER, or the audience will get bored waiting "in the dark" for the next scene. Treat it like the finish of a chapter in a book, rather than the end of a paragraph.

24 Storyboard



TOM'S SCHOOL DAY

Leaving home-"Bye Mama," "Bye Tom!"

In the car: With Papa and dog

Meeting schoolfriends at gate

A running+jumping game in the playground

Art class

Group singing

Foot ball on the playing field

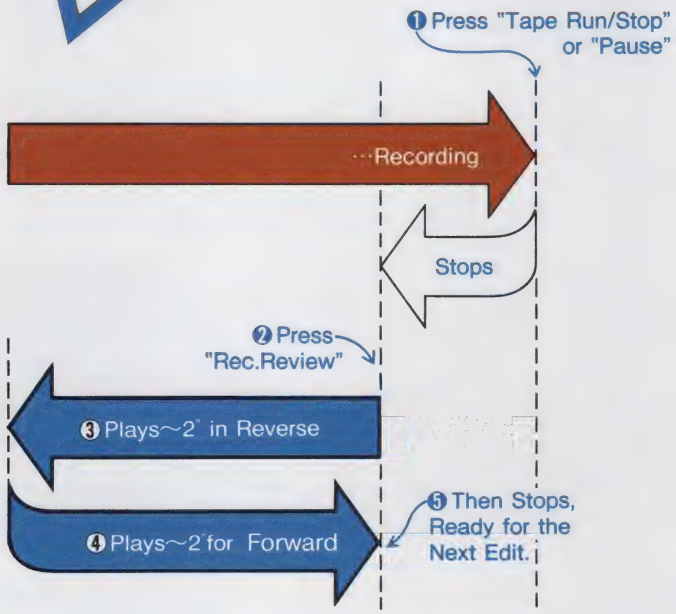
The teacher waves good bye

Ice-cream shop "Yummy"

Home again "How was your day?"

Before you arrange a "shoot" with performers (especially if they're amateurs), you would be wise to plan your recording step by step. Film-makers and video producers use a **storyboard.**

25 Recording Review



Have you ever shot a roll of film, only to discover later it didn't advance at all? With Betamax there's no worry. To ensure that you pushed all the right buttons and that nothing went wrong with the recording, use the "record review" function which comes on the SL-2000 and some Trinicon cameras (e.g., HVC-2200). Record/Review gives you an **instant replay** on the spot.

After shooting a scene and pausing the tape, press the REC/REVIEW button located next to the zoom rocker-switch on the camera handgrip. The Betamax will play back the last two seconds of your previously recorded segments in reverse, stop, and play them again forwards. The VTR then stops automatically and enters the PAUSE mode again, ready for a clean edit into the next scene.

You can use the Linear Time Counter to find the start of each "cut" with ease. Simply press the zero RESET button before you shoot each scene. Later, press the small RETURN button next to it, and the tape will automatically fast-wind and stop at that point.

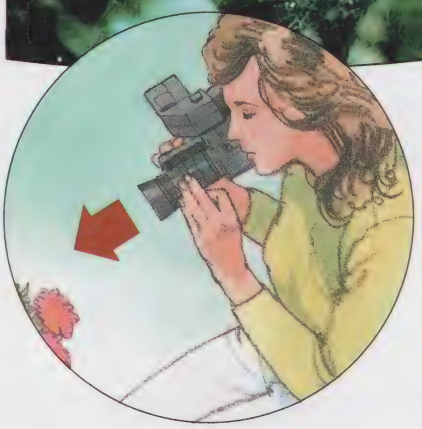
Use the SWING SEARCH controls to locate a precise spot on the tape. You'll find it comes in particularly handy when you decide to keep only a part of the scene you just shot or re-do it completely.

26 Macro Video

The world is not the same when seen super closeup. Like a microscope, the MACRO lens setting allows you to move right up to objects (as close as 4mm.), for extreme closeups. Your lens can almost touch the object you're shooting! Use the MACRO setting to turn quite ordinary objects into an exploration ground of wondrous forms and textures. Of course it has many practical applications as well.

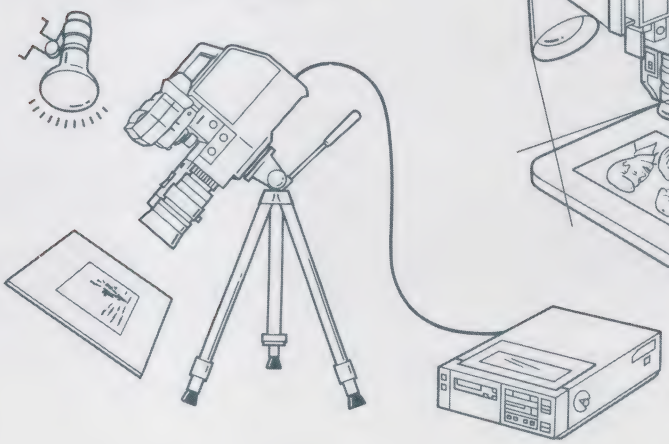
Turn the manual zoom lever to WIDE ANGLE, pull the lever out a bit, and continue turning into the **"green"** MACRO setting of the lens, to focus close up. Unscrew the lens hood if it is casting a shadow in the picture.

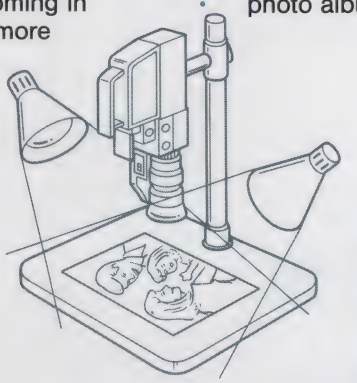
You can go directly from MACRO to WIDE-ANGLE. For example, you could be shooting blades of grass and then use the electronic zoom for a smooth transition to children playing on the lawn. Before putting the zoom ring into macro setting, you should adjust the lens focus for distant subjects (with zoom in TELEPHOTO).

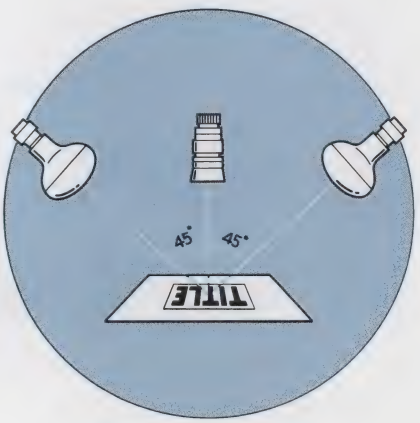


27 Video of Photographs

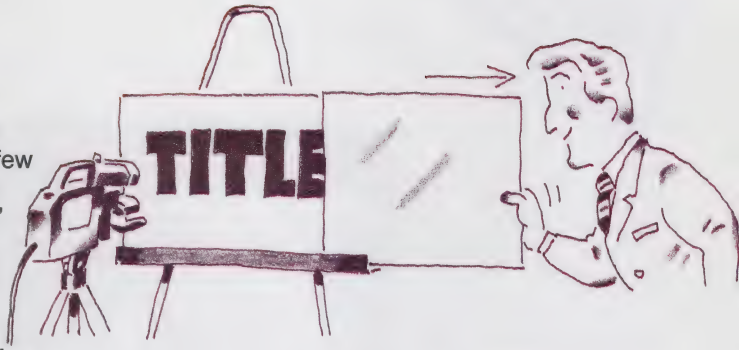
To record photos onto video set up the Trinicon camera as you would for shooting graphics. You can make a moving "family album," recording everyone's comments, do an "oral history" tape, where the old timers tell you how it was, or include photos in an action tape, for a change of pace. You can add interest to the pictures by zooming in or out, and by moving the photo (more steady than moving the camera). You can also **animate** photos by recording parts of the image briefly. Use the TAPE RUN/STOP or PAUSE button to start recording, count slowly to "two," "stop"; wait a couple of seconds, then record the next image; and so on . . . This makes it so much more enjoyable than just flipping through the photo album.



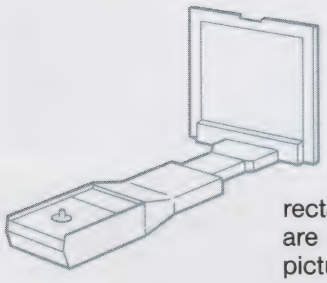




28 Graphics & Titles

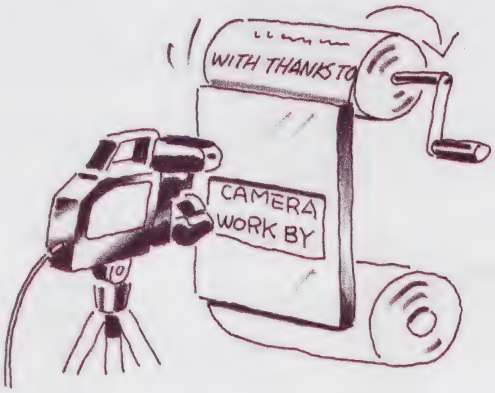


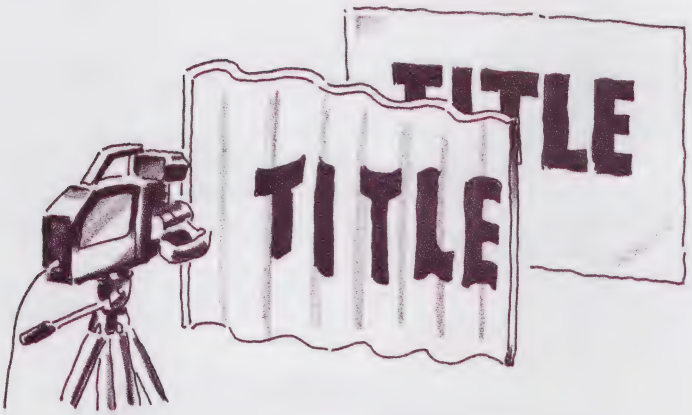
With a little imagination, you can produce interesting and enjoyable **titles.** The first few moments of your tape may be the crucial test of whether or not you really "turn on" your audience. **Credits** at the end of the tape, where you thank everyone involved and your mom, can also be livened up with some thought.

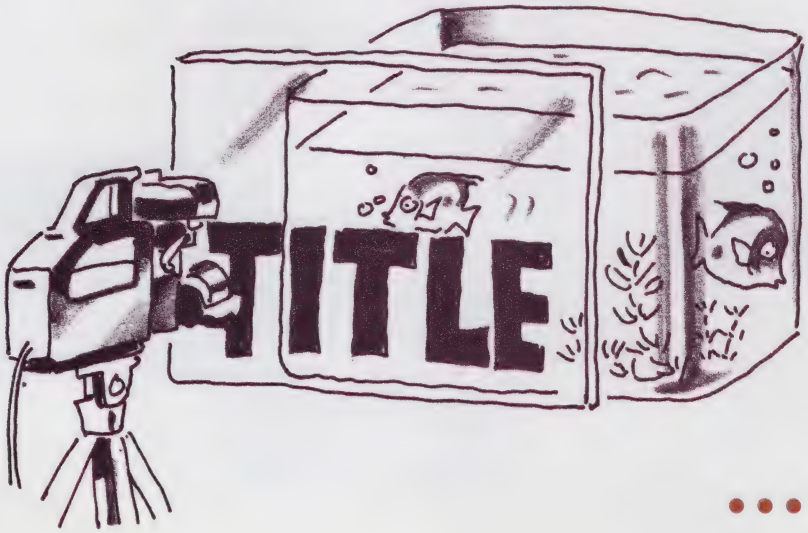


Use the Sony HVT-2100 TITLER, for quick, handy shooting of titles and small graphics. It's easy to type credits onto cards that slip into the TITLER.

The **"aspect ratio"** (length vs height) of a TV screen is 4:3. (The "size" of a TV screen is measured as the diagonal of this rectangle.) The edges of the picture tube are not as clear as the center, and the pictures on some TV sets are not quite centered. The sides of the Sony Trinitron screen are squared off, because of the cylindrical picture tube design; but many other brands show less of the recorded picture. As a result, you should generally place your titles and graphics toward center screen, leaving a blank border.







You can purchase **Transfer (or "press-type") lettering** sheets at graphics supply shops, where artists', designers' or architects' materials are sold. With hundreds of sizes and styles available, you simply rub the face of the plastic sheet, and each letter sticks to paper or card. Use simple typefaces ("sans-serif"), a little bold, for easy, quick reading.

Use **felt pens** for lettering and drawing. Many colors and sizes of these markers are available. Let the kids have fun designing the family's tape credits.

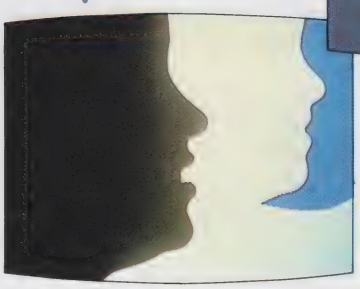
You can also use the MACRO setting of the lens, for **closeups** of graphics (see page 37). For incredible visual effects, with superimposed images, mixes of recording and live camera, controlled colors, and fades in and out of titles, use the HVS-2000 Special Effects Generator (see page 39).

29 Special Effects

A great variety of special effects are made possible with the Sony HVS-2000 Special Effects Generator.

it is much more than just a **camera switcher.** In effect, you can use it to switch between a black & white camera (Sony recommends the HVM-100*) and the Trinicon camera *or a previously recorded tape.**

Better still, you can **superimpose** one image on the other. That is, you can "key" recorded footage into either the black *or* white portion of the image shot with the HVM-100 camera. **Titles** or **subtitles** appear "on top of" the "real" image (as illustrated), or the real image can show "through" the lettering or graphic.



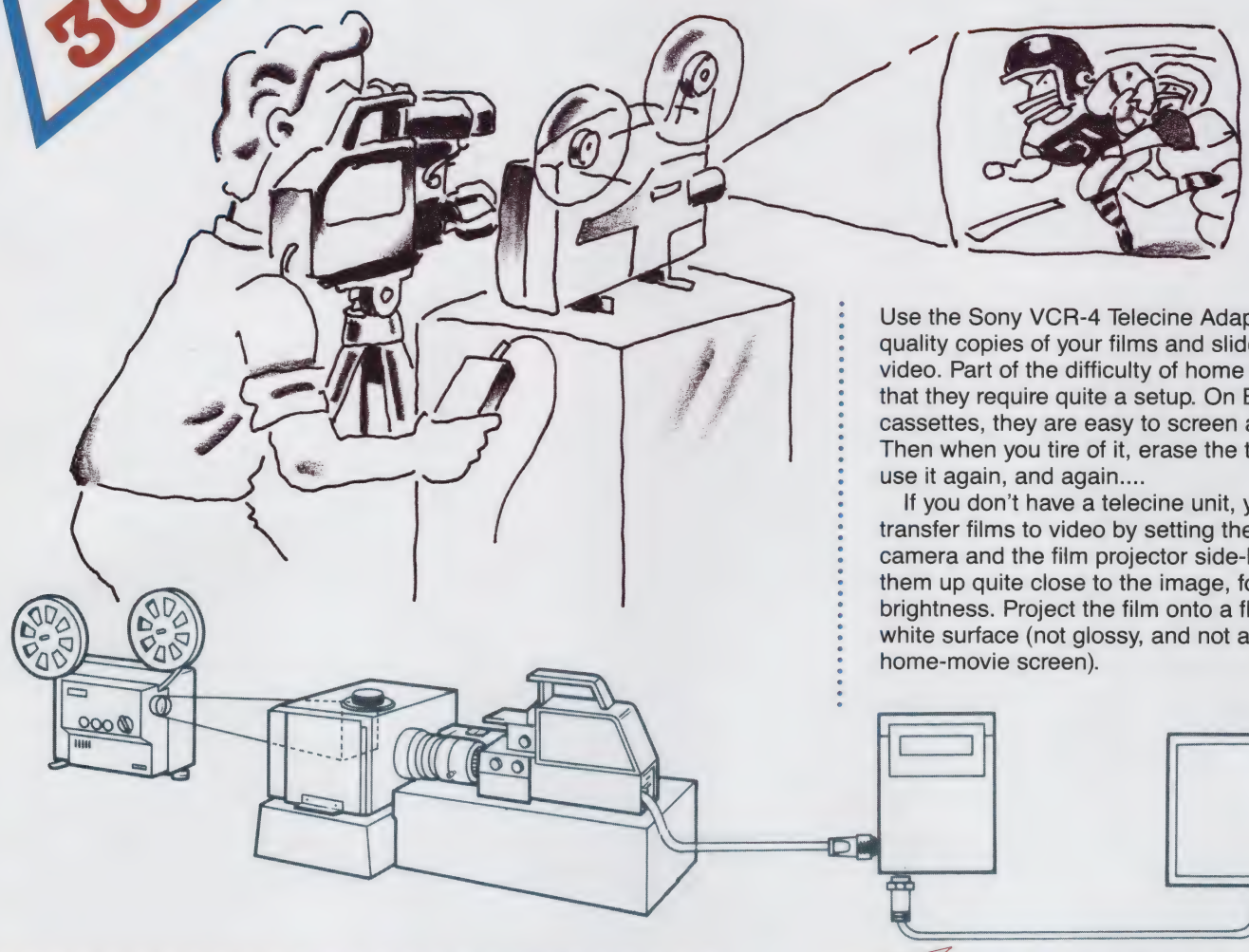
At the same time, you can **colorize** the black & white image, so it also appears in a color of your choice. You can then control the saturation (amount of color) and also the intensity, so you are able to fade titles or effects in and out.

The HVS-2000 is perfect for mixing titles as you shoot; or use it when copying your tape onto a second VTR.

Illustrated below are just a few possibilities. The abstract patterns are **feedback,** created by pointing the B & W camera at the TV-monitor while recording. Try pointing both cameras at your subject. If you have two VTRs, you can re-record effects on top of effects, giving many layers to your images.

(*The HVS-2000 incorporates a "Gen lock," and the HVM-100 "locks to external sync.")

30 Film to Video Transfers



Use the Sony VCR-4 Telecine Adaptor for quality copies of your films and slides onto video. Part of the difficulty of home movies is that they require quite a setup. On Betamax cassettes, they are easy to screen any time. Then when you tire of it, erase the tape and use it again, and again....

If you don't have a telecine unit, you can transfer films to video by setting the Trinicon camera and the film projector side-by-side. Set them up quite close to the image, for maximum brightness. Project the film onto a flat, matte-white surface (not glossy, and not a glass-bead home-movie screen).

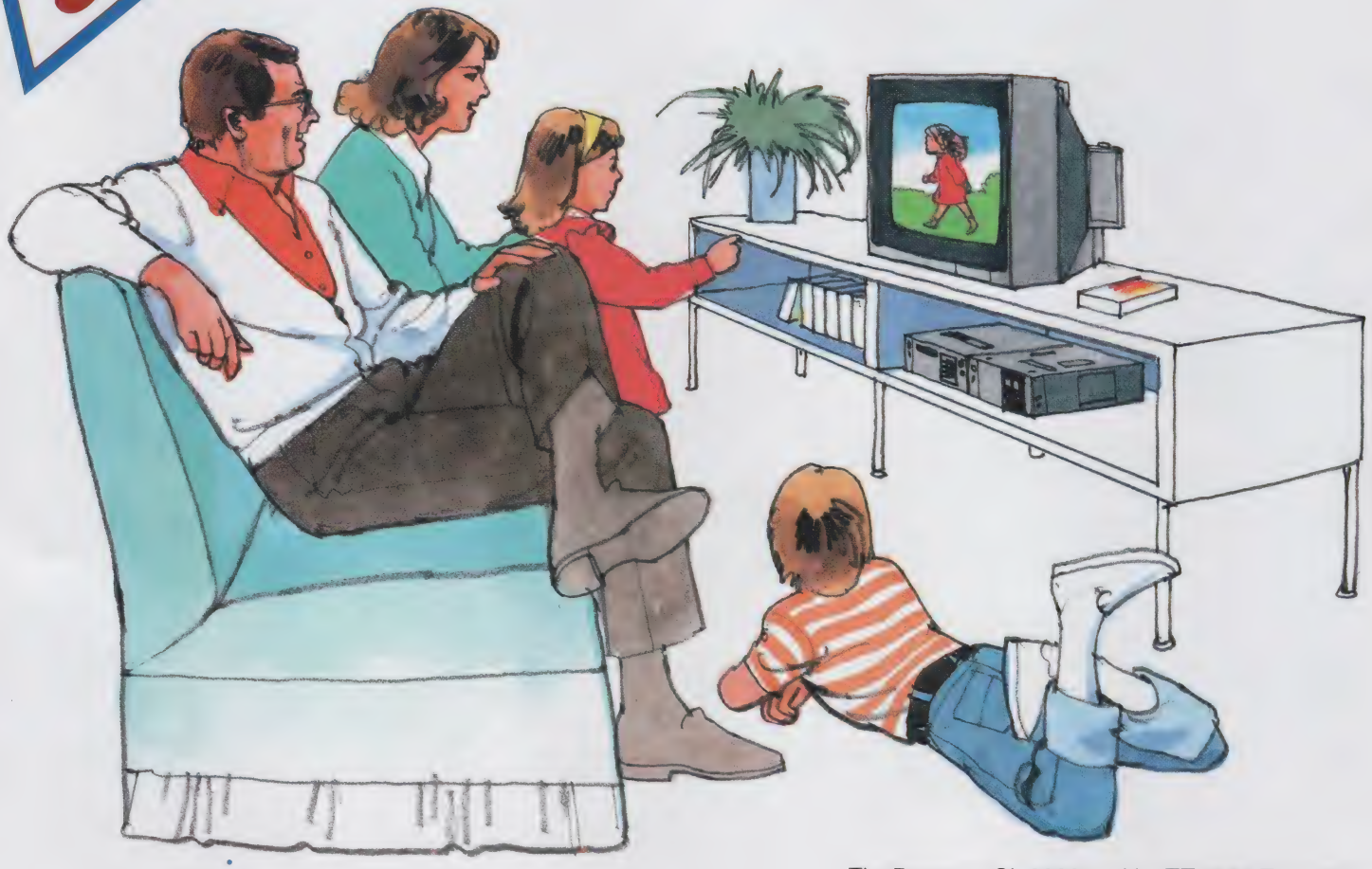
31 Photos of Video

One of the beauties of video is that you will capture many precious moments on tape which you would likely have missed with a still camera, because you record video in "real-time." Remember, you can always take photographs of your tapes to send to your friends and family. All the photos in this book were shot right off the screen. Just set the camera at right angle to your TV monitor, at center-screen height. Use a "leaf shutter" (or "lens shutter") camera, rather than a "focal plane shutter" camera. You might try a test roll of film once, just to see how it comes out. Try shooting the photos as the tape is playing and also in PAUSE (still-image), to see which is best. At 400 ASA, shoot at speeds slower than 1/30 or 1/15 second, around f5.6; use daylight film.

16

Shooting video is enjoyable and it's also rewarding. The best part of the whole video enjoyment, however, is "appreciating" the outcome of your own camera work. Play it back at home and share your experience with your family. Or play the tape back in the field immediately after you finish shooting. The following chapters explain playback-at-home and playback-in-field; and give a lot of handy information on tape, trouble-shooting, etc.

32 Playback-At Home



The Betamax SL-2000 and its TT-2000 Tuner/Timer Unit are designed to fit side-by-side in an audio rack. You should have your video system set up at home for comfortable viewing and easy access to the plugs and wires behind. Always operate the Betamax on AC at home, to save battery life.

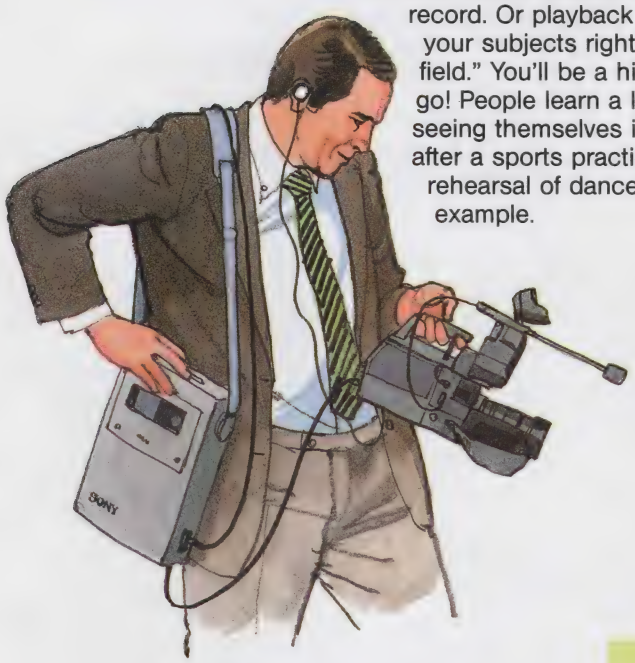
The Betamax automatically adjusts to and plays back tapes in Beta I, II or III mode (regardless of whether the REC. MODE switch is set at Beta II or III). Friends will likely enjoy viewing the variety of titles and subjects in your growing tape library, so be ready and able to set up comfortable extra chairs, cushions, etc. when guests want to watch tapes.

The Sony video projector doubles as an attractive coffee table. It is best installed in a long rectangular setting and has a a wide 90° viewing angle. For large group showings, it is ideal; for home viewing, it gives video and TV impact you must see to believe. For the brightest and sharpest TV picture, have a look at Sony's PROFEEL Trinitron Component TV.

33 Playback-In the Field

You can play tape back via the small B&W **viewfinder** monitor, listening to the sound with an earplug or headphone. This instantaneousness is possible only with video. It's a great way to encourage the person you are recording, and you should always check how it went yourself.

Remember to bring along the RF cable, so you can hook up to *any* **TV set.** If you can afford one, purchase a portable color TV like Sony's KV-4000 (you'll need a battery pack too), so you can monitor exactly what you're getting in color as you record. Or playback the tape for your subjects right there, "in the field." You'll be a hit wherever you go! People learn a lot from seeing themselves immediately after a sports practice, or during rehearsal of dance/theater, for example.



While you are out, if you plan to playback the tape somewhere indoors, bring along the AC adaptor to save battery life. If you must use battery power for playback on a TV set, disconnect the camera to save power.

Select a TV channel (3 or 4) on to which there is no station transmitting in the area you're playing back your tape. Switch the RF UNIT's channel at the back-right of the SL-2000 to correspond, if necessary.

34 Nature

The advised **storage** temperature range of the SL-2000 is between −20°C. (−4°F.) and +65°C. (+149°F.). Suggested optimal temperature range for **use** is from 0°C. (+32°F.) to +40°C. (+104°F.). Avoid excess humidity.

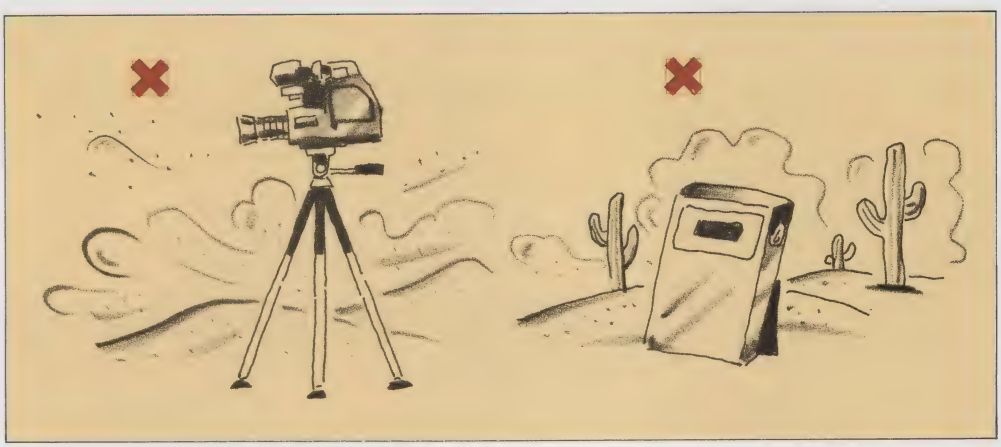
You can use your video system outside these limits, but take steps to protect it. For example, under **very hot sun** and no wind, shade the camera well. A parasol or camera shade is a recommended accessory for use in the desert. Do not let camera surface temperature exceed +50°C. (+122°F.), too hot to touch.

Batteries are less efficient in the **cold.** If you can, keep the SL-2000 under your parka; or wrap the deck in a blanket. To keep the camera eyepiece from fogging over, hold it a bit away from your eye. Don't bring the VTR directly into a warm room, or humidity will condense on the head drum and other parts. *You* will get awfully cold shooting in the snow; dress warmly.

Be careful of **sand;** it'll get into everything. Tripod legs, gritty, will become impossible to telescope closed. Keep the VTR in a sealed plastic bag during use in blowing sand. In **wind,** always use a windscreen on the mike.

If tapes get **wet,** they'll curl or stick. If merely dampened, allow them to dry at room temperature before trying to play them. See also DEW, on page 50. In case of **fire,** CO_2 extinguishers will not harm video.

You really want to move? Do it! use the LCH-220 **Action Pack** accessory and VTR remote control.



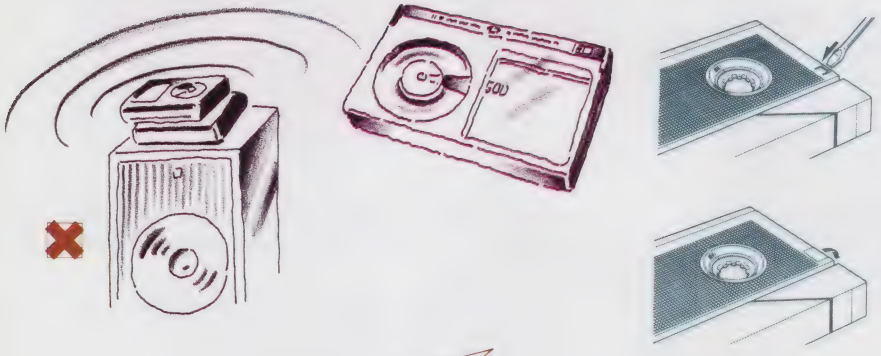
35 Tapes

Tape is comprised of millions of tiny magnetic particles. In order to retain the quality of your recording, you must keep your cassettes away from any **strong magnets,** as they will become partially or totally erased. To prevent someone from **accidentally erasing** a tape you wish to keep, by their recording on it again, break off the **safety tab** underneath. If you later wish to record over that video tape, place a piece of adhesive tape over the hole.

Aside from its magnetic quality, videotape has certain physical characteristics. A long, plastic ribbon, it will get soft in extreme heat, hard in freezing temperatures, and brittle if too dry. Don't ever leave your cassettes lying in the sunny window of your car, or its cold trunk in snowy winter. A dusty environment is bad for the tapes and your VTR; recording quality will deteriorate.

Never **splice** videotape. Don't touch videotape with your bare hands. Do not leave a **cassette** in the VTR if you won't be using it for a long time.

Store your cassettes as you would books, neatly arranged on a shelf in a logical order, in their protective boxes. They will be easy to locate, and will stay clean. **Label** your cassettes clearly, numbering each one. You might wish to use colored-dot labels to classify your titles for handy reference. For example: family tapes may be white; work tapes, yellow; off-air, green; movie titles, blue; instructional tapes, red; ballet, orange; pop music, purple; etc.



SAMPLE LABEL (BETA I, II, III)

TITLE: _____

PRODUCERS _____

ADDRESS _____

DATE FINISHED: _____

DURATION: _____ MIN. _____ SEC. _____

DESCRIPTION: _____

_____

_____

36 Logging

TAPE NUMBER ☐ TITLE ☐

MIN.SEC.	PICTURE	SOUND	QUALITY

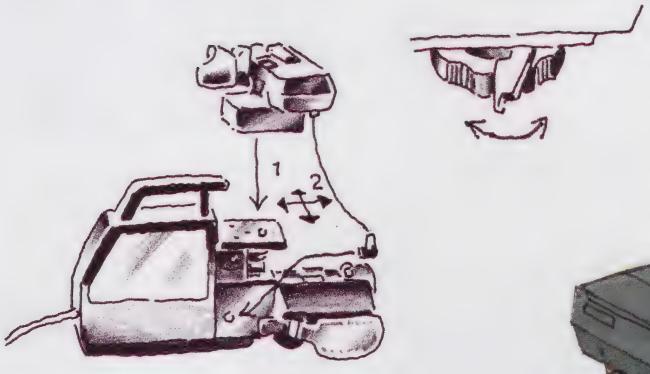
Video artists and TV pros keep a record of everything they've recorded, like a ship's **log** kept by the captain. It will help you find each bit you shot or took off-air, much like the jacket of a record album. If ever you take the step up to professional level, you can copy your tapes and edit them, in which case logging is absolutely necessary. Before you start, rewind the cassette, and press the VTR's RESET button.

37

Some More Tips...

★ Record about 15 seconds of blank (lens cap) at the start of each cassette to make sure any Beta deck will play back your programs without cutting into the beginning.
★ Or use a color bar card to record about 20 seconds at the beginning of all your cassettes.
★ Blank search—to find the unused portion of of a cassette, fast-forward or rewind, watch the arrow (triangle) on the TIME COUNTER. When it stops blinking, that part of the tape is "blank."
★ Try recording with both eyes open from time to time. You will likely lose concentration on the viewfinder picture, but will be able to notice other action going on which you are missing with the camera.
★ You can adjust the viewfinder for your **left eye,** by pushing the viewfinder as far to the left as it will go.
★ Try tightening the VTR **carrying strap,** to see if it is more comfortable higher up. Try it on the other shoulder, and across your chest.
★ At the beach, you may find the **carrying strap** uncomfortable. Put a small towel or folded T-shirt on your shoulder.
★ Adjust the camera's **grip strap** — comfortably tight for shoulder shooting. Loosen it completely for shooting "at the hip."

★ Use a small hiker's **backpack** for bringing along the AC adaptor, cables, refreshments, and so forth.
★ Always ensure that your batteries are charged before you leave on a shoot. Do you have enough cassettes? Prepare everything well in advance.



★Try recording **abstract images** and patterns just for fun, or for titles. Use the MACRO setting; go out of FOCUS on lights. Use the **special effects generator** (HVS-2000). Try pointing your camera at a TV-monitor connected to the VTR while recording; etc.

★You can purchase a variety of colored or effects **filters** at a photographic supply shop (58mm mount filters). Unscrew the lens hood to screw on the filter(s).

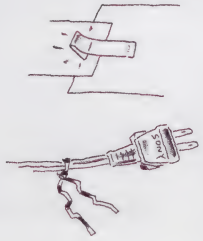
★You can connect Betamax to a TV (via VHF OUT), a monitor or a video projector (use the VMC-220A video cable if your TV has "video input") to monitor the picture *while* you are recording. That way your subjects or an audience can watch the taping in progress. Children especially get excited when they see themselves "live on TV," so excited that things can get hard to control. In that case it may be best to hook up the TV monitor, test it, and turn it off while recording. Then you can treat everyone to instant playback as soon as you've finished shooting.

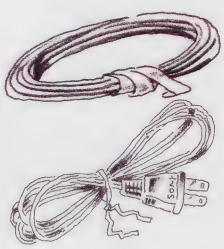
★When you plug together any two **cables** that don't have a built-in "safety lock," tie a simple knot at the point of connection. This will ensure that the cords won't accidentally get pulled apart.

★When using **adhesive tape** to secure something temporarily, fold over the edge and stick it to itself. That way you will find the edge quickly, and it will peel off with ease. Use sticky tape or a short piece of insulated, hard wire to keep your cables coiled and out of the way.

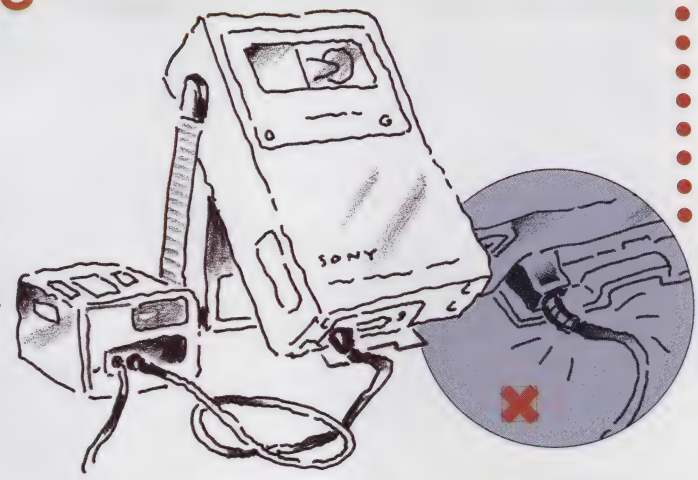
★You will find that the LC-230 **soft case** with its pull-out stand props up the unit at a convenient angle for access to its control panel.

Don't throw away the carton and foam **packing** in which you bought your equipment. It is ideal for shipping or moving.

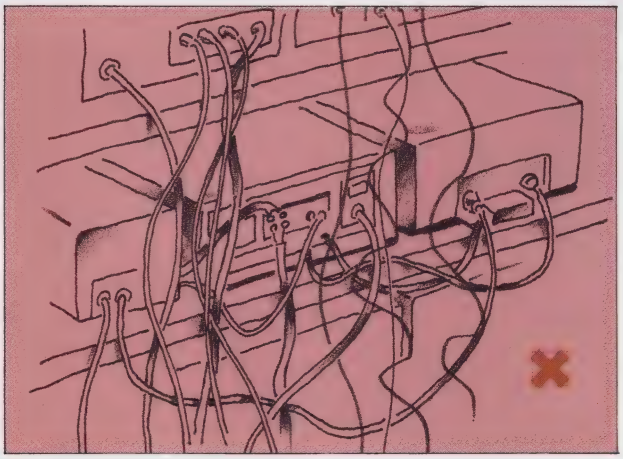




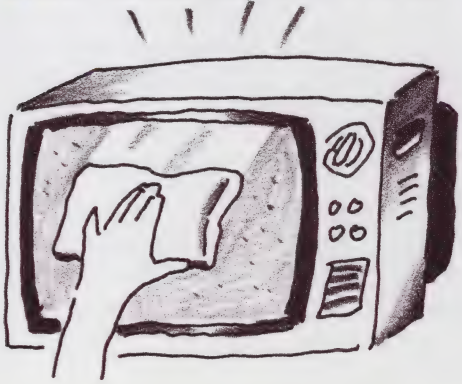
38 Take Care



- **Never** point the camera directly at the sun or any **bright light.** *Avoid* continuous shooting in extremely bright light.
- **Never** leave cassettes lying in hot places.
- Don't let the hot sun, a spotlight, etc. shine directly into the viewfinder **eyepiece,** as it may be damaged.
- *Don't* store cassettes or use the VTR near any magnetic field. Do have your dealer **demagnetize** the heads once a year, and tune up your VTR.



- Don't smoke, drink or eat around video tapes or equipment. Do keep video in a **dust-free** place.
- Do clean off the TV-monitor screen from time to time. It attracts dust due to **static electricity.**
- Use a dry, soft cloth for cleaning the outside of your video equipment. For stains, use a cloth lightly moistened with mild soap. Do *not* use alcohol (glass cleaner), benzene, or any type of solvent.
- Use only dry, special tissue paper or a clean chamois for cleaning the **lens** (available at photo shops or opticians).
- Never connect your VTR to a **TV set**



unless you *remove* the antenna or **CATV** connection first.

- Don't change BII and BIII mode selection while **recording** is in progress, as the playback will be unstable at that spot. You can use both Beta speeds on the same cassette, as the BetaPak automatically will switch. However, you would be wise to record in only one mode, if there is any chance you will play the cassette on another VTR.
- You can operate the BetaPak deck horizontal (flat), vertical, at an angle, or while moving. However, the home TT-2000 Tuner-Timer is designed to be used in the horizontal position.
- Don't ever put anything heavy on top of the VTR.

- Never lean your BetaPak (using the soft-case flap) when something is plugged into the back "door." You can damage the connections.
- Don't leave **cables** lying about where people can trip over them, step on **plugs,** etc. *Do* connect up equipment neatly, not with a tangle of wires.
- Warning: TV programs, films, videotapes, and other materials may be copyrighted. Unauthorized recording and/or showing of such material publicly may be contrary to the provisions of the copyright laws.

39

Trouble-shooting

First — try to figure it out yourself; the answers are *not* all here. If you get stuck, try this check list.

❶

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1. No image in the viewfinder? (No **power**?)
*Is everything properly connected? Is there a **cassette** in the VTR?

If operating on AC current:
*Try a different **power outlet**, or check the wall socket by plugging something else in, such as a lamp.
*If the **AC plug** doesn't fit properly into the wall socket, try reversing the plug.
*If using the AC-220 adaptor, you must push ON both its *and* the VTR's POWER switches.
*When an external power source is plugged into the VTR, even if there is a **charged battery** inside, battery power is automatically cut off.
*If using the TT-2000 Tuner-Timer Unit, push its POWER switch ON, *not* the one on the VTR. Also press the VTR/TV select button so VTR lights up, and set the INPUT select switch to CAMERA.

If operating on DC current:
*Is there in fact a **battery** in the VTR?
*Is it fully charged?
*If you left the VTR in STOP mode, it will have shut off automatically after 8 minutes, to save power.
*If the **AC Adapter** is plugged into the VTR, and "OFF," even though you have a battery in the VTR, it won't work. Unplug the AC adaptor, or switch it "ON."
*Check to see if the DEW indicator is being shown on the liquid crystal display panel of the Linear Time Counter. If so, **moisture** has condensed inside the VTR, and it won't operate. Remove the cassette and plug in the AC Adapter (or Tuner/Timer Unit with its HEATER switch on). The moisture should evaporate within an hour. When this has been accomplished, the DEW indication will disappear and the VTR will operate.

2. **Snow** on the TV monitor? (Random dots)
*Is the tape recorder ON? If not, you will see snow.
*Is the VTR connected to the VHF input at the back of the TV monitor?
*Is the TV switched to the correct channel (3 or 4)?
*Is the RF unit (VHF OUT) at the rear of the BetaPak switched to the same channel as well?
*After extensive use in a dusty environment, or with dirty and overheated tapes, the **video heads** may become clogged. Use an L-25CL cleaning cassette, following instructions provided with it.
*If the spinning video heads hit something hard (e.g., if an object fell in through the cassette drawer), they can crack, in which case you will need to have them replaced.

3. A **line of snow** across the image?
*Adjust the TRACKING control.
*When using the SWING SEARCH playback feature, you will get these lines. Adjusting the TRACKING will lessen or eliminate them.
*If you are using the VTR near a strong electric source such as a vacuum cleaner or a generator, this may cause interference.

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Turn off the source of interference or move farther away.

4. **Picture weak**, or "noisy" or ghosting.
*Is it on the right channel?
*Adjust the fine-tuning controls of your TV.

5. **Picture rolling**
*Adjust the vertical control of your TV monitor.

6. **Colors off** (too red, too green, too weak, etc.)
*Did you adjust the WHITE BALANCE properly before starting to shoot? Did you adjust its fine tuning?
*Adjust the TV monitor's color settings (hue, color).
*Adjust the TV monitor's fine tuning control for the channel.

7. **Smudge or dirt** in the picture?
*From time to time, clean the camera lens with special lens tissue or a clean, soft chamois.

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*If you point the camera at a very bright light (such as the sun), you may **burn** the pickup tube resulting in a dark mark "sticking" in the same spot on the screen. If it is a severe, dark burn, you may have to have the Trinicon tube replaced. If the mark is grayish, you may be able to remove the burn by the following procedure: point the camera at an evenly lit, white surface, not too bright, and leave it on. The burns should slowly disappear.
*The lens cap looks like a **UFO** when you try to do a WHITE BALANCE adjustment? Make sure your lens is *not* in MACRO position when doing a white balance.

8. **RECORD** didn't work properly?
*Was the cassette's recording **safety tab** removed? Put a piece of adhesive tape over the hole.
*Are you sure the red indicator lamp was lit in the viewfinder (and the red tally light on the front of the camera)? If not, you may not have pressed the RECORD button *and* held it in while pressing PLAY. Then you must press the TAPE RUN/STOP button on the camera grip to record, or the PAUSE switch on the BetaPak for recording to begin.

6

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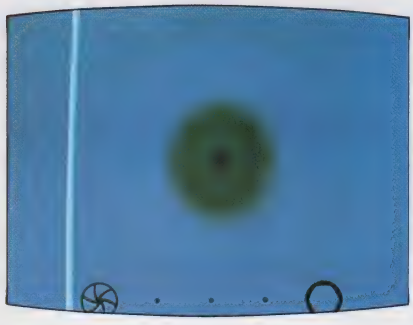

7

*If you left the VTR in PAUSE (standby) without recording for about 8 minutes, the SL-2000 switches OFF automatically (when using the internal battery), or goes back into the RECORD mode (when using an external power source).
*If after the VTR automatically reverted to RECORD mode, you pressed the camera grip button, thinking you started recording ...in fact, you stopped!
*The deck won't operate if moisture is detected on the head drum.

9. **FADER** not working properly?

*You should *not* use the Betamax PAUSE button if you wish to use the FADER.
**After* you switch ON the fade button, use only the camera grip TAPE RUN button to fade into your scene.
*When the camera viewfinder PEAKING switch is ON, the picture will not appear to fade in the viewfinder, but in actuality a fade will be recorded. In other camera settings you will see the fade as it is actually being recorded. The next time you press the TAPE RUN button on the camera grip, it will fade-in (if you are starting) or fade-out (at the end of a sequence).

10. **Sound problems?**

*A loud whistle noise (audio **feedback**) is due to the TV-monitor volume being up while recording. Lower the volume or move the microphone away from the TV speaker.
*A **buzz** could come from a loose audio wire, from intertwined AC and audio cords, or interference from strong electrical appliances.
*When using the **SWING SEARCH** feature there is no sound, even in normal forward speed.
*If using an **external microphone**, make sure the plug is securely slipped all the way into its jack. If it has slipped out part way, nothing will record.
*Does the external mike you're using have an ON/OFF switch, and is it on?
*If the microphone uses a **battery**, is there one, and is it charged?

11. **Tape drawer** won't **eject**?

*The POWER must be switched ON.

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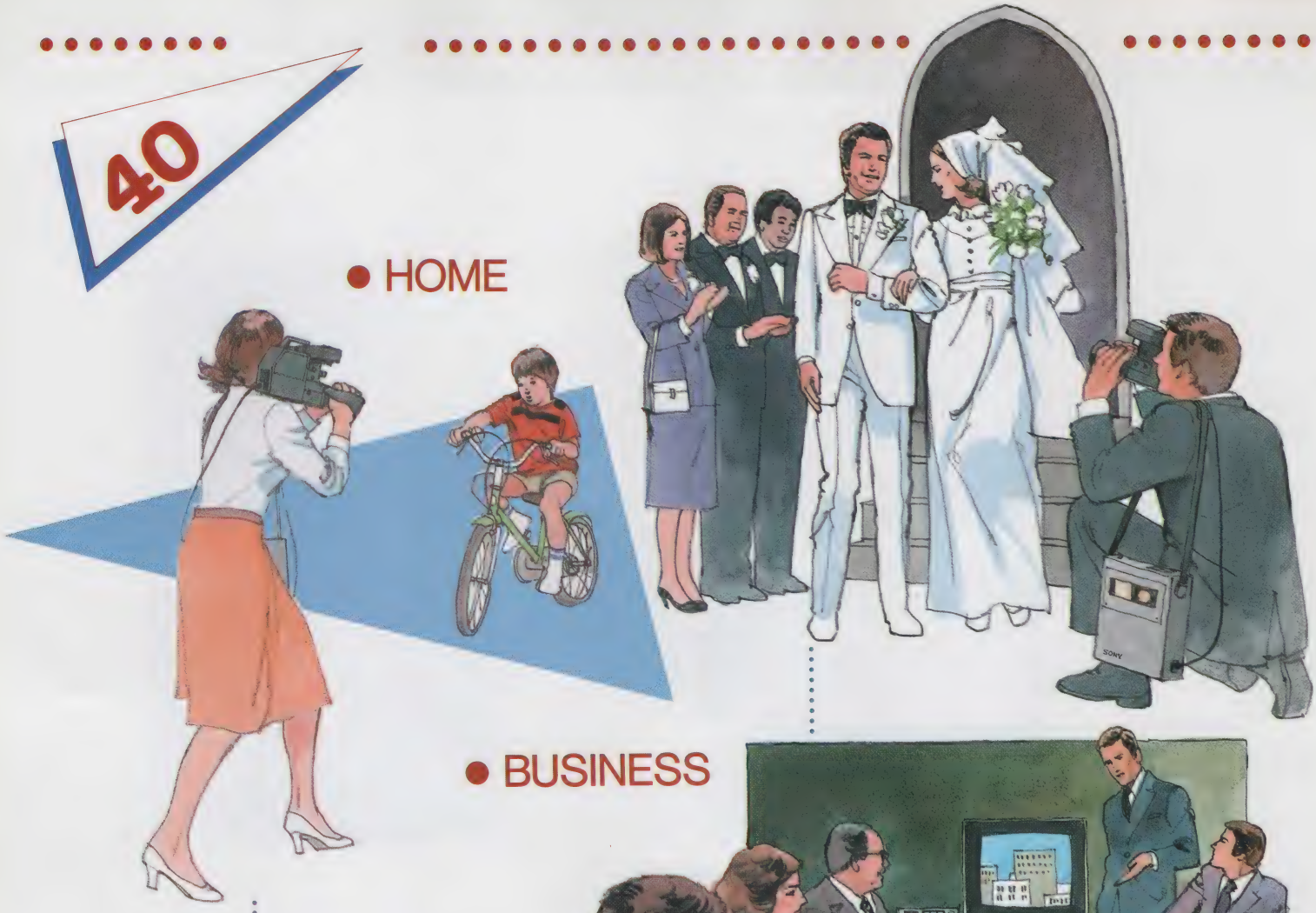
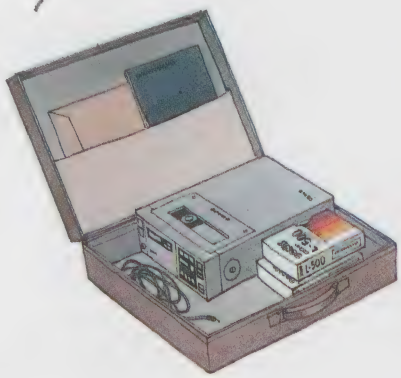
- HOME

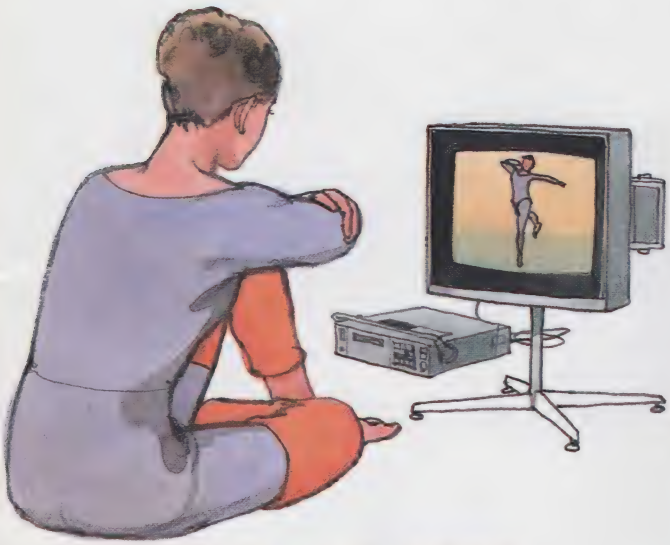


- BUSINESS

- REHEARSING A SPEECH



More Applications



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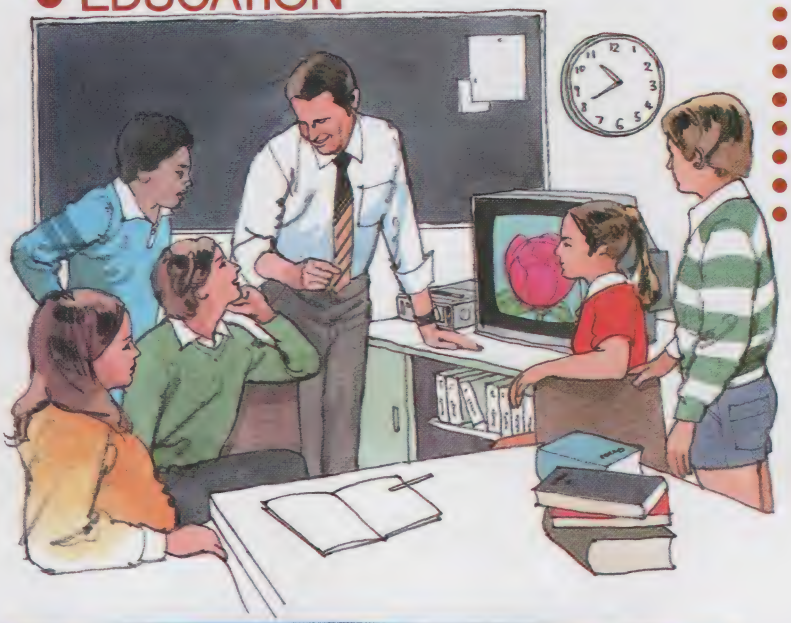
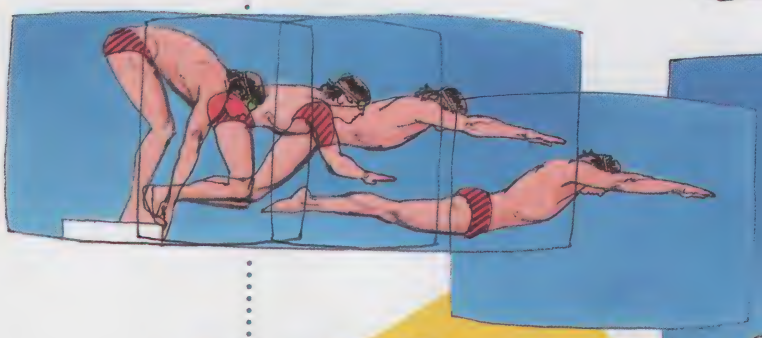
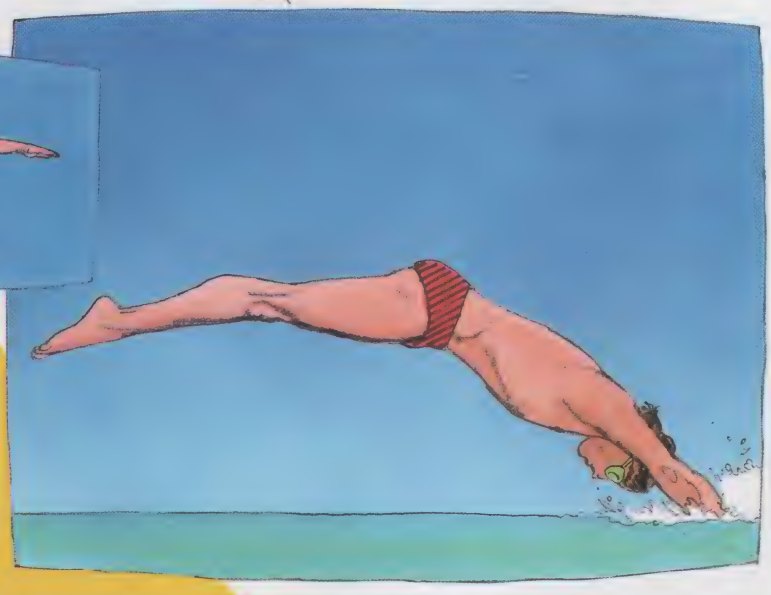


• PERFORMING ARTS





• SPORTS

41

Caution

What *not* to do

42

Glossary

AGC — Automatic gain (level) control.

Amplify — To increase levels, as with a volume control.

Aperture — The opening of the lens (iris).

B&W — Black and white.

Barndoors — 4 flaps on professional spotlights, used to control the area lit.

Blank tape — Not yet recorded on.

CTL — Control Track.

Cord — An electronic cable used to connect two devices.

Deck —A videocassette recorder.

Dew—Moisture condensing on a cold head drum can cause the tape to stick, so the Betamax stops automatically.

Dolly — A lateral camera movement.
— A wheeled device to move the camera as you shoot.

Dubbing — Copying a tape, or recording "off air."
— Recording over an audio track.

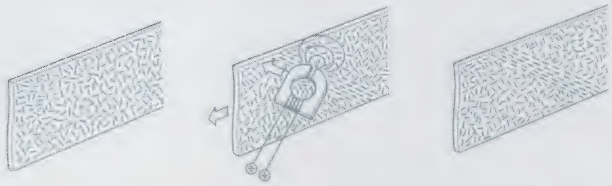
Feedback — The howling caused when a microphone picks up the sound from its own speaker system.
— The pulsating image obtained by pointing a video camera at a TV monitor to which it is connected, live. (See special effects.)

Gaffer's tape — A gray cloth tape that sticks anything to anything, available at theatrical supply shops.

Gain — Recording level or intensity.

Green positions — The "automatic" or optimum setting positions for most of the Trinicon camera's controls.

Head — A variable electromagnet used for recording or playback of magnetic tape.



Jack — A receptacle into which a plug is pushed.

Lavalier mike — A tiny microphone, sensitive to voice, worn on a tie clip or cord around the neck.

Live — A direct transmission of an event as it occurs (e.g., people watching what you are recording, on a TV-monitor connected to your VTR).
— A device through which current is flowing (e.g., a microphone is "live" when it is connected and working, and "dead" when it is not).

Macro — Extreme closeup setting of a lens.

Mic. — Mike, or microphone.

Mixer — A device for combining signals from several sources into one, at a proper level.

Noise — An undesirable addition to a recording, which results in hiss, hum, or shriek in audio, and snow, instability, or color loss in video.

Pause — This control stops the tape from running, and results in a still image (or "freeze frame"). It also stops the tape running during recording.

RF — Radio frequency.

RF unit — A device which converts the Betamax video and audio signals into a composite signal which goes in the VHF antenna of a home TV (channel 3 or 4).

Shoot — To record (verb); a recording session (noun).

Tracking control — Adjusts the VTR so that the rotating video heads scan the video tracks properly during playback.

VHF — Very high frequency — channels 2 through 13 on your TV.

VTR — Video tape recorder.

Voice-over — A narrative added to a recording, erasing the previous sound track.

Wild sound — Whatever sounds occur at random within the microphone's pickup pattern.

Wind screen — A soft plastic foam cover which fits over the front of a microphone to lessen wind noise and "popping" sounds when "P" or "B" sounds are spoken close to the mike.

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All specifications subject to change without notice.

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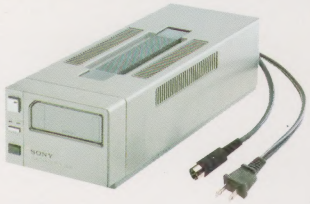
Accessories

Betamax

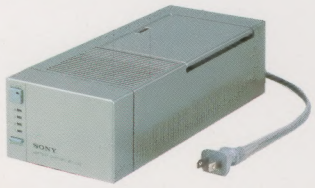
LCH-220 Action Pack
with RM-311 Wired Remote Control*

CAT-220 Video Cart

NP-1 Rechargeable Battery Pack



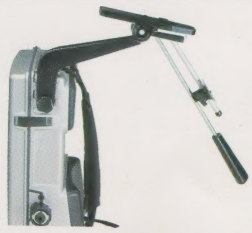
AC-220 AC Power Adaptor



BC-220 Battery Charger
(to charge four NP-1 Battery Packs)

LC-140 System Bag

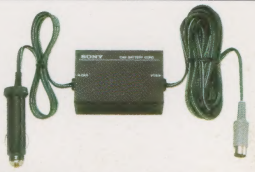
LC-230 Soft Carrying Case



VCT-220 Action Pack Camera Adaptor*

AH-220 Hard Handle

CCK-3MP Video Connection Cable



DCC-2400B Car Battery Cord

VMC-220A Adaptor Cable

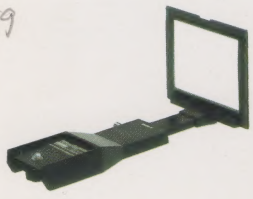
Trinicon

VCT-20AC Tripod

VCT-100K Heavy Duty Tripod

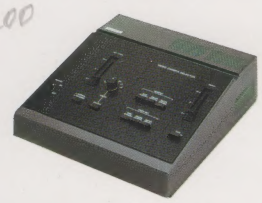
VCR-4 Telecine Adaptor

CCK-5/CCK-10 Camera Extension Cables



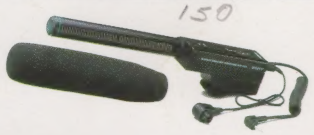
HVT-2100 Titler

LC-150 Soft Camera Cover



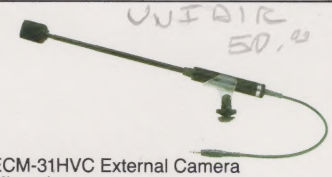
HVS-2000 Special Effects Generator

HVR-2000 Camera Remote Control



ECM-Z300C Camera Zoom Microphone

VCL-1558A Tele-Conversion Lens
VCL-0758A Wide Conversion Lens



ECM-31HVC External Camera Microphone

VFC-6CB Viewfinder Extension Cable

*Available in Fall 1982.

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